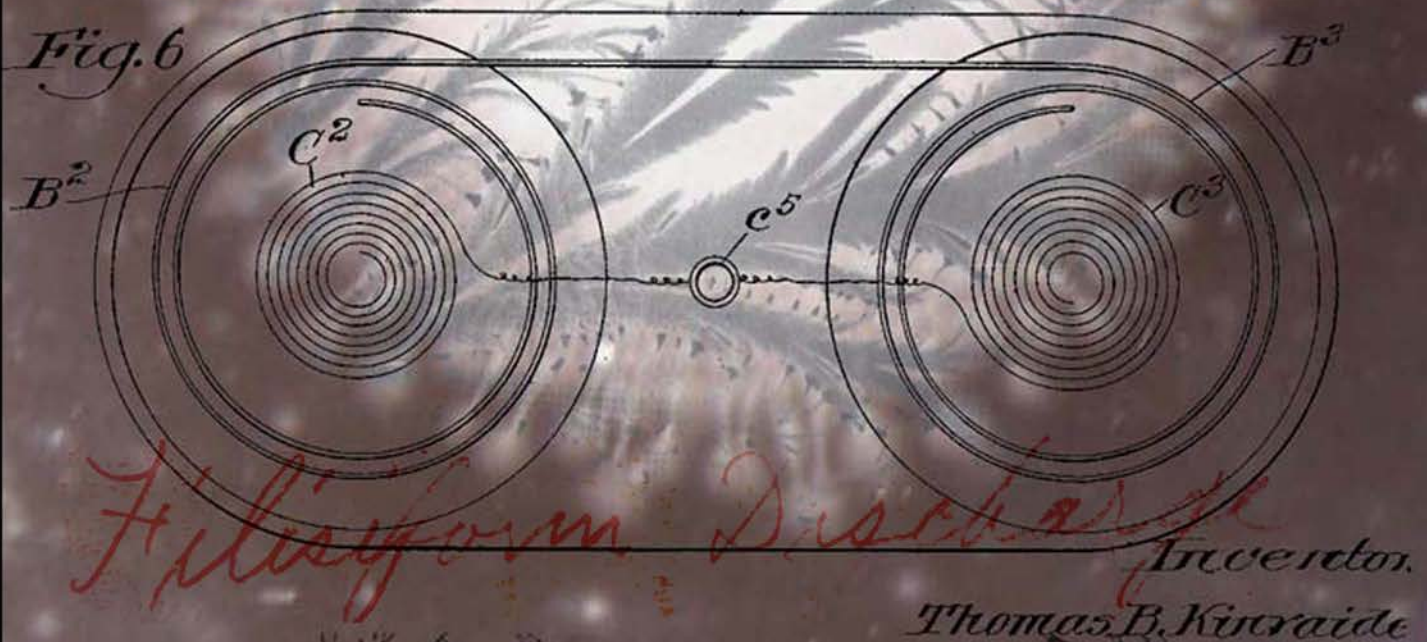


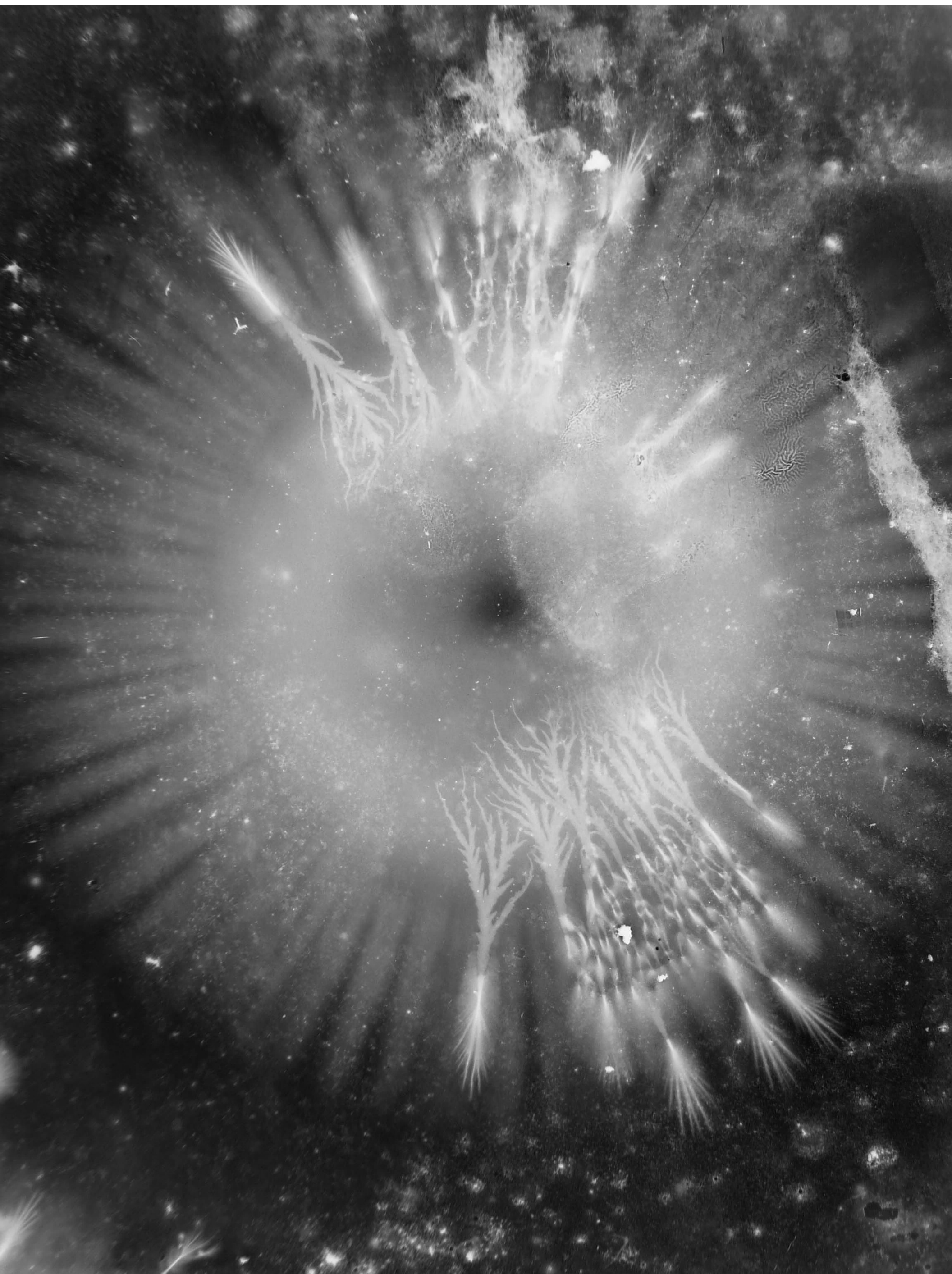
JEFF BEHARY

IN QUEST OF KINRAIDE

VOLUME ONE: *Electrical Discharge Photos*



The Kinraide Coil

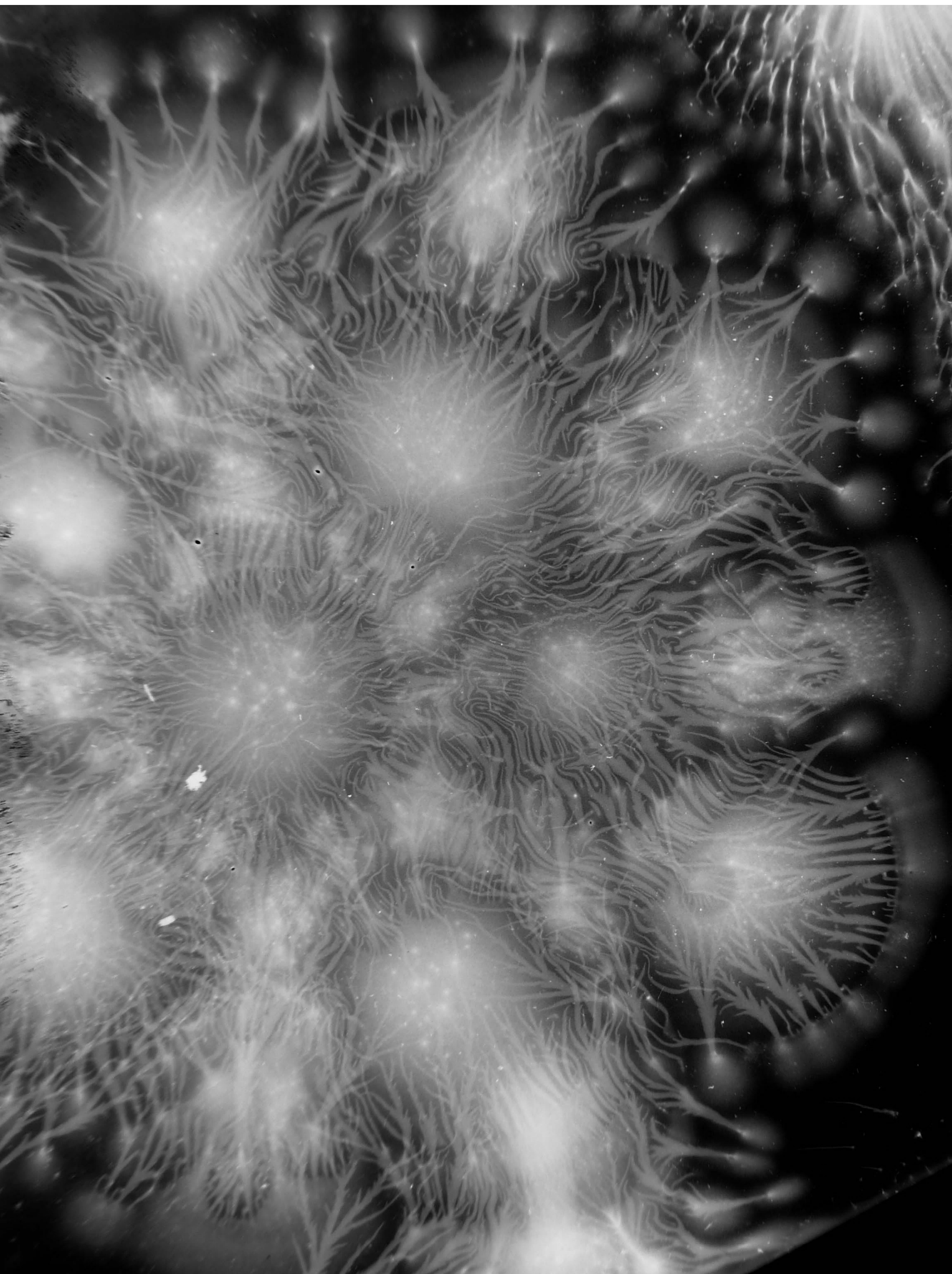


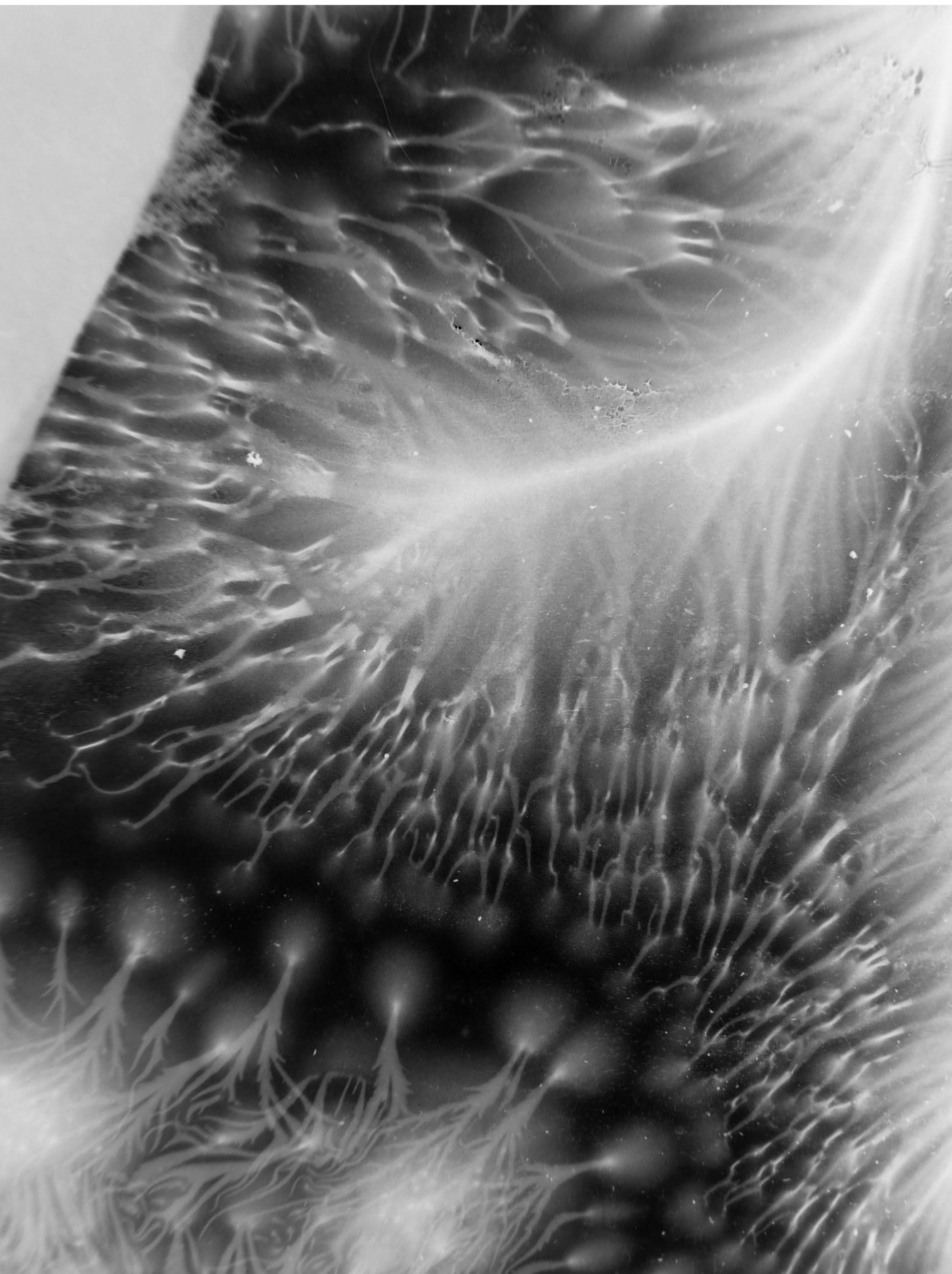




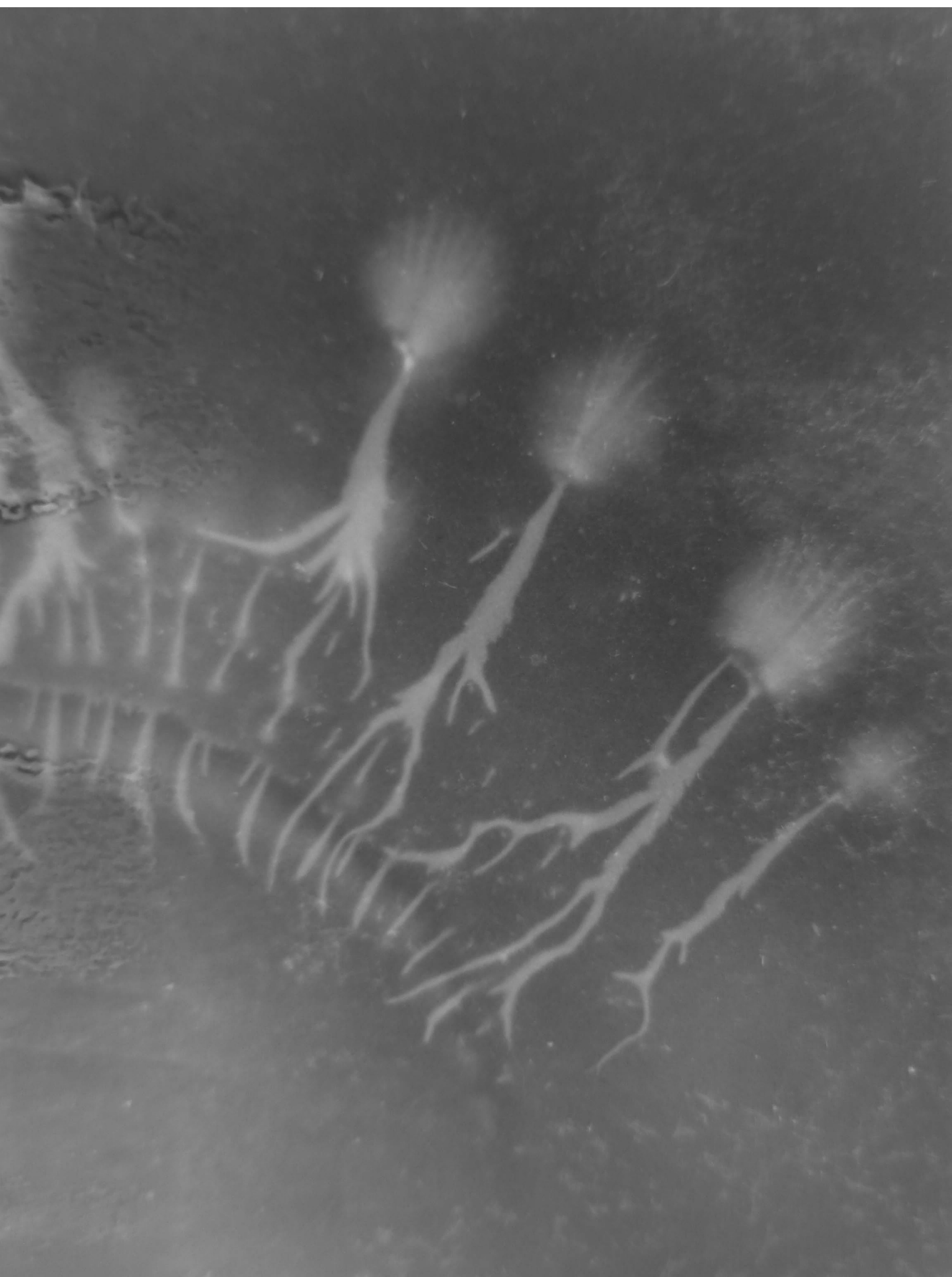


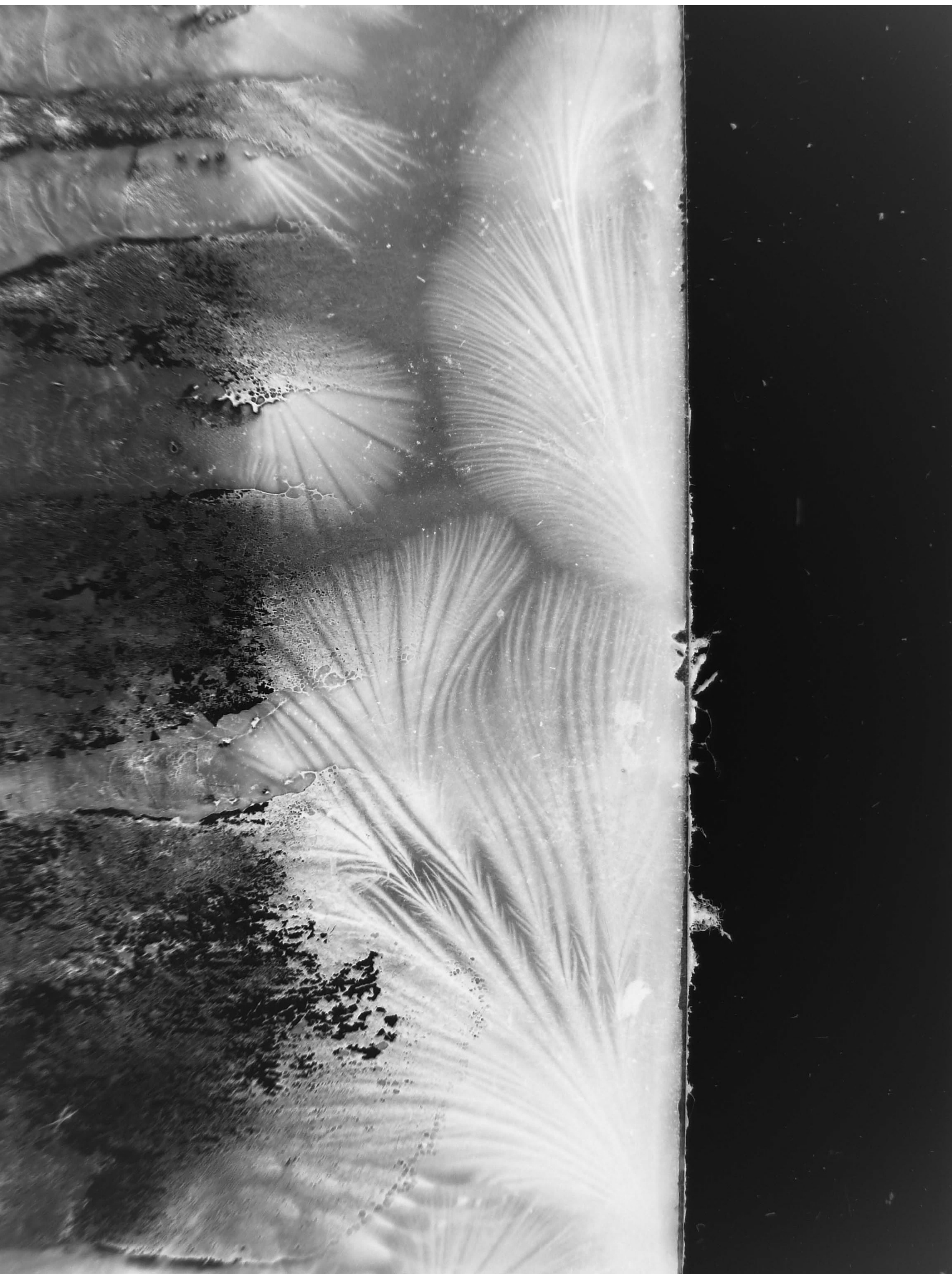




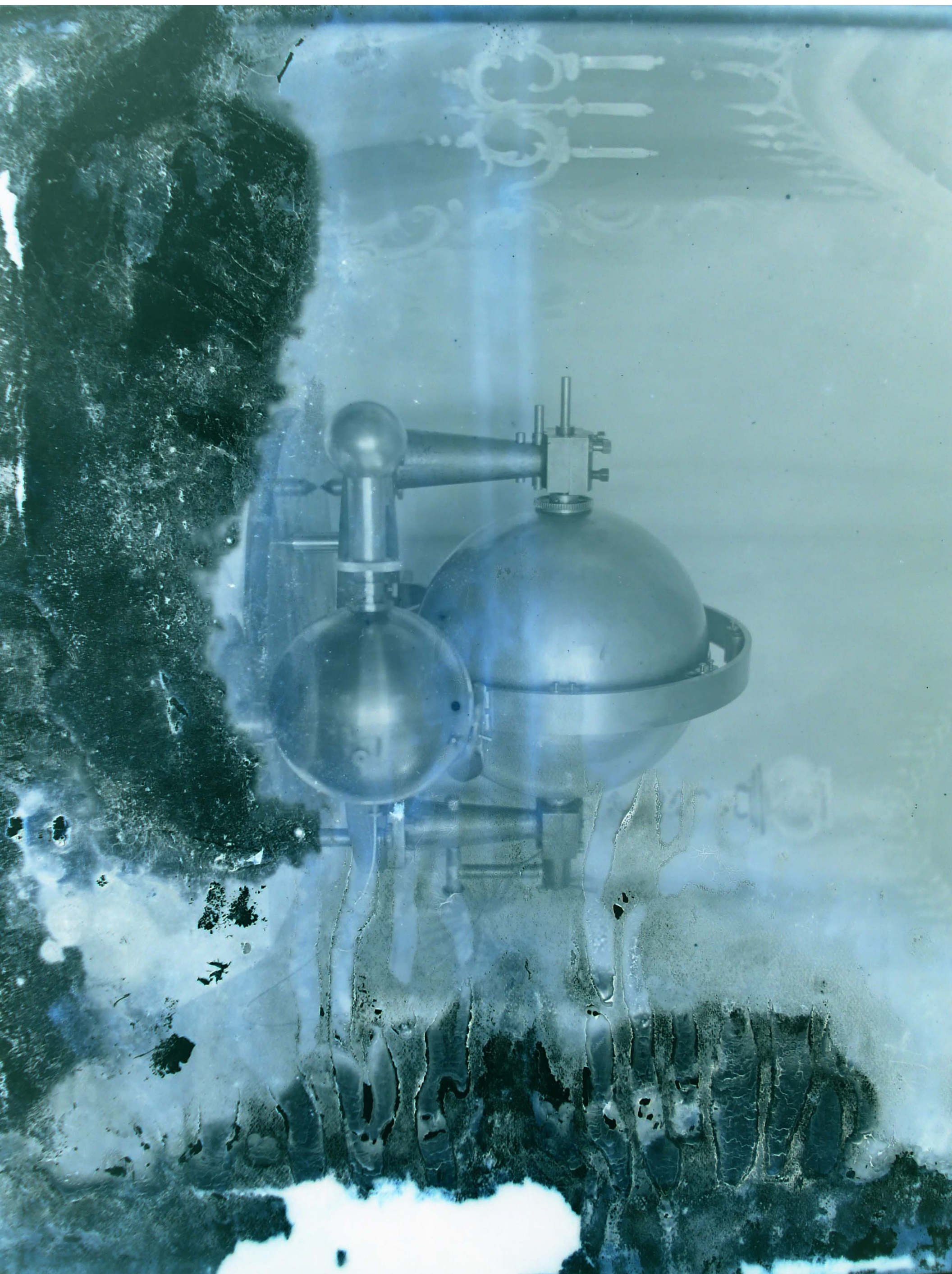


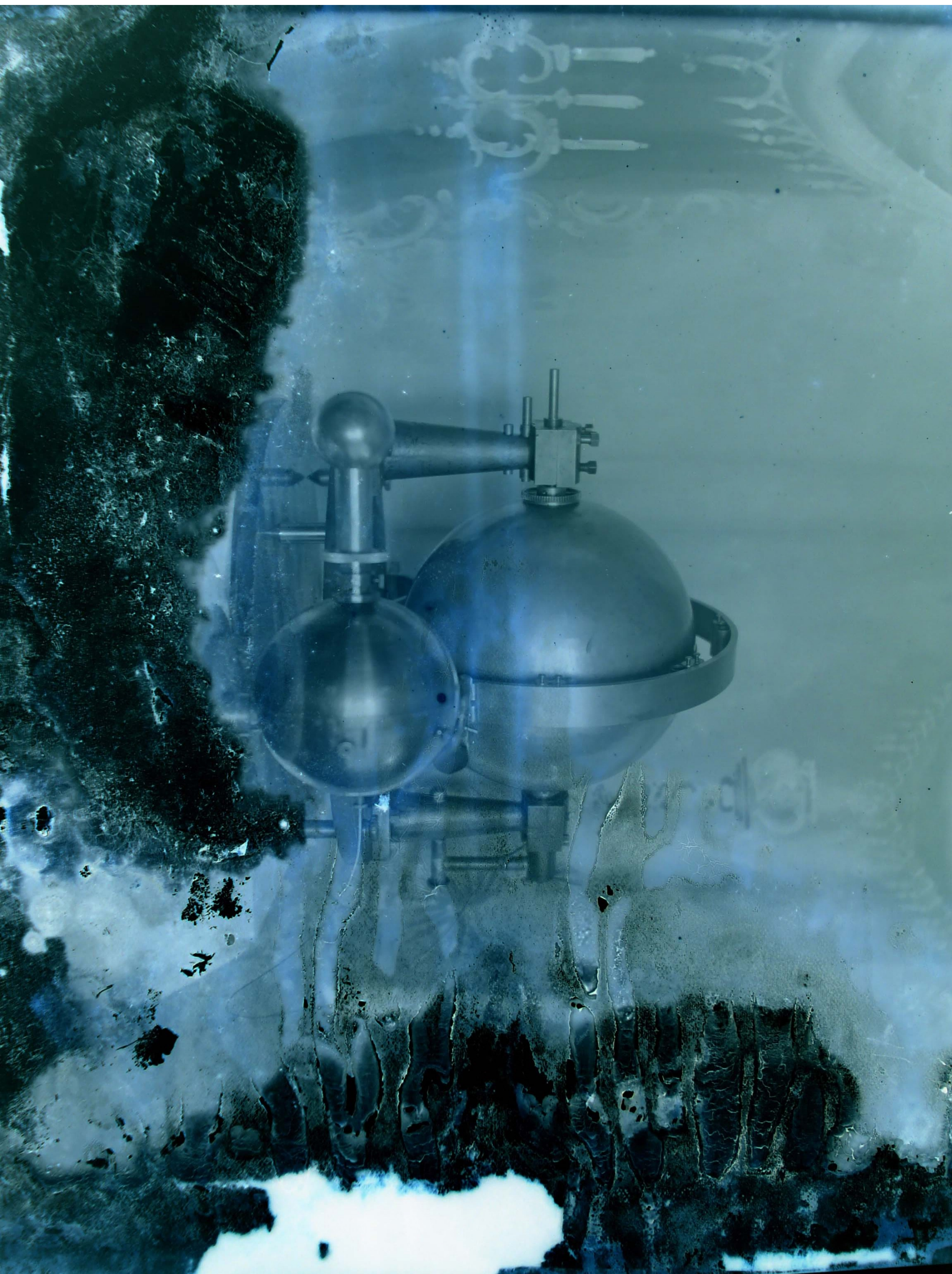






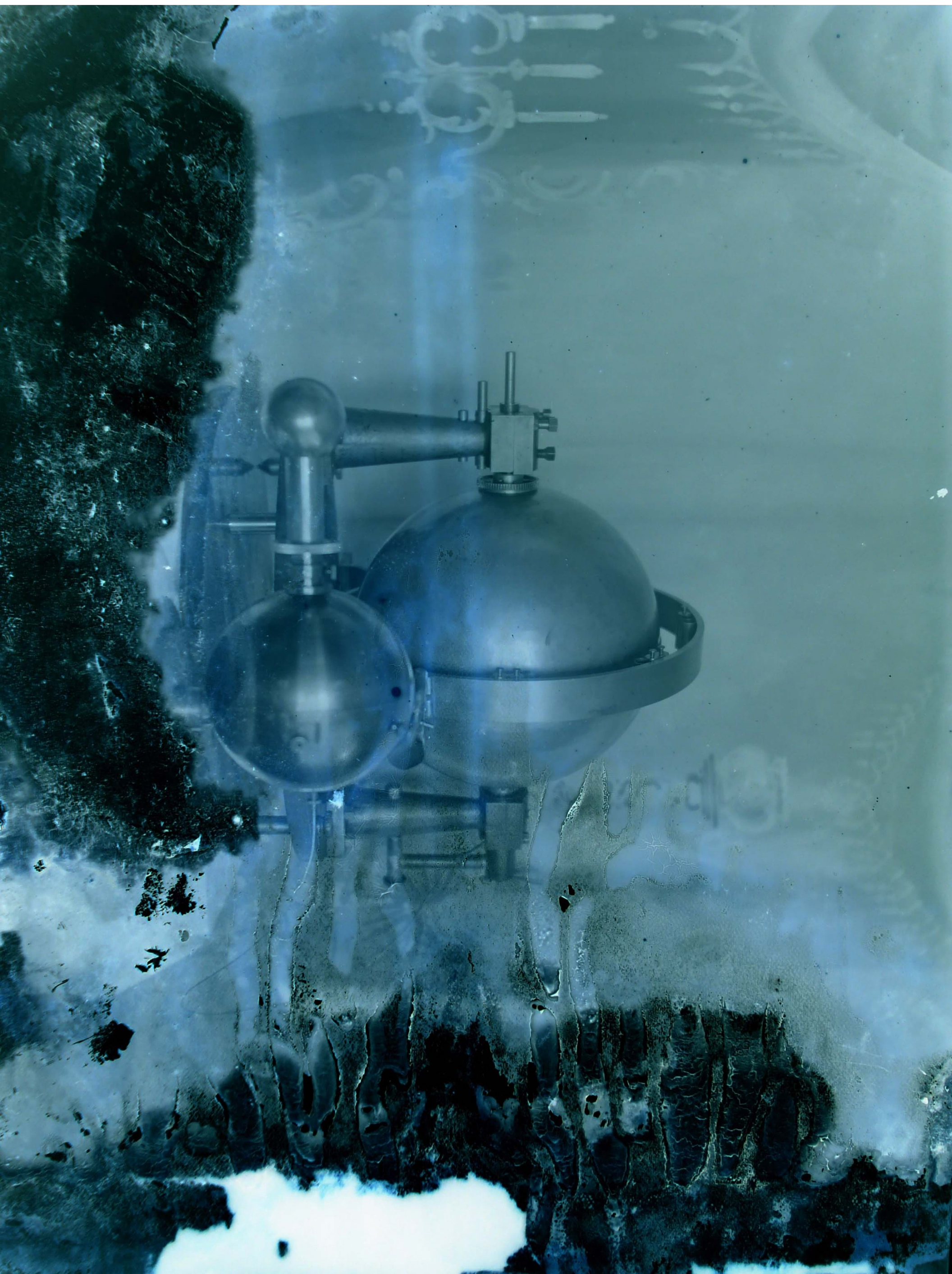
























No. _____

Name Henry

Order _____

Remarks Book

Retouched _____

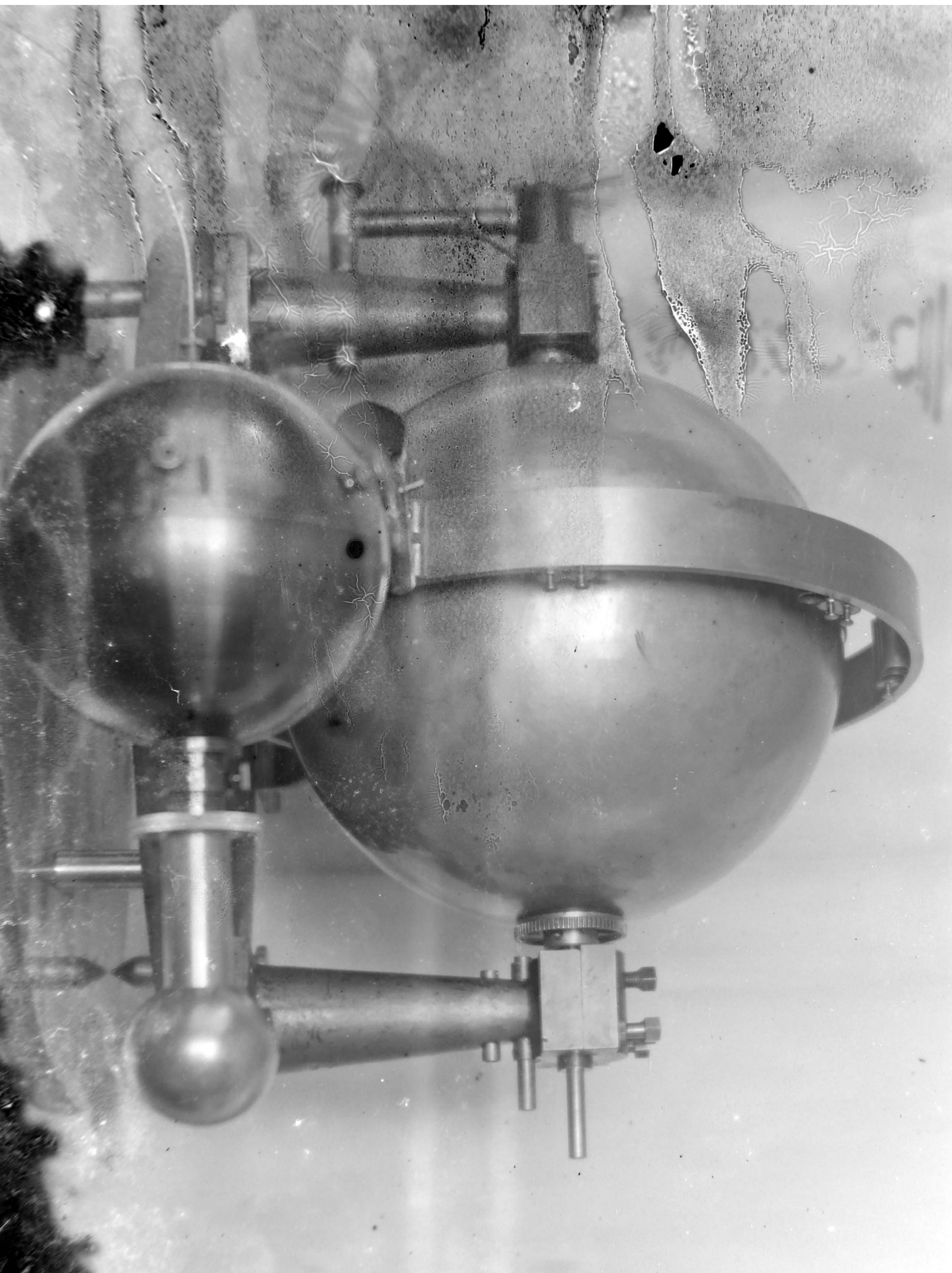
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Reorder _____

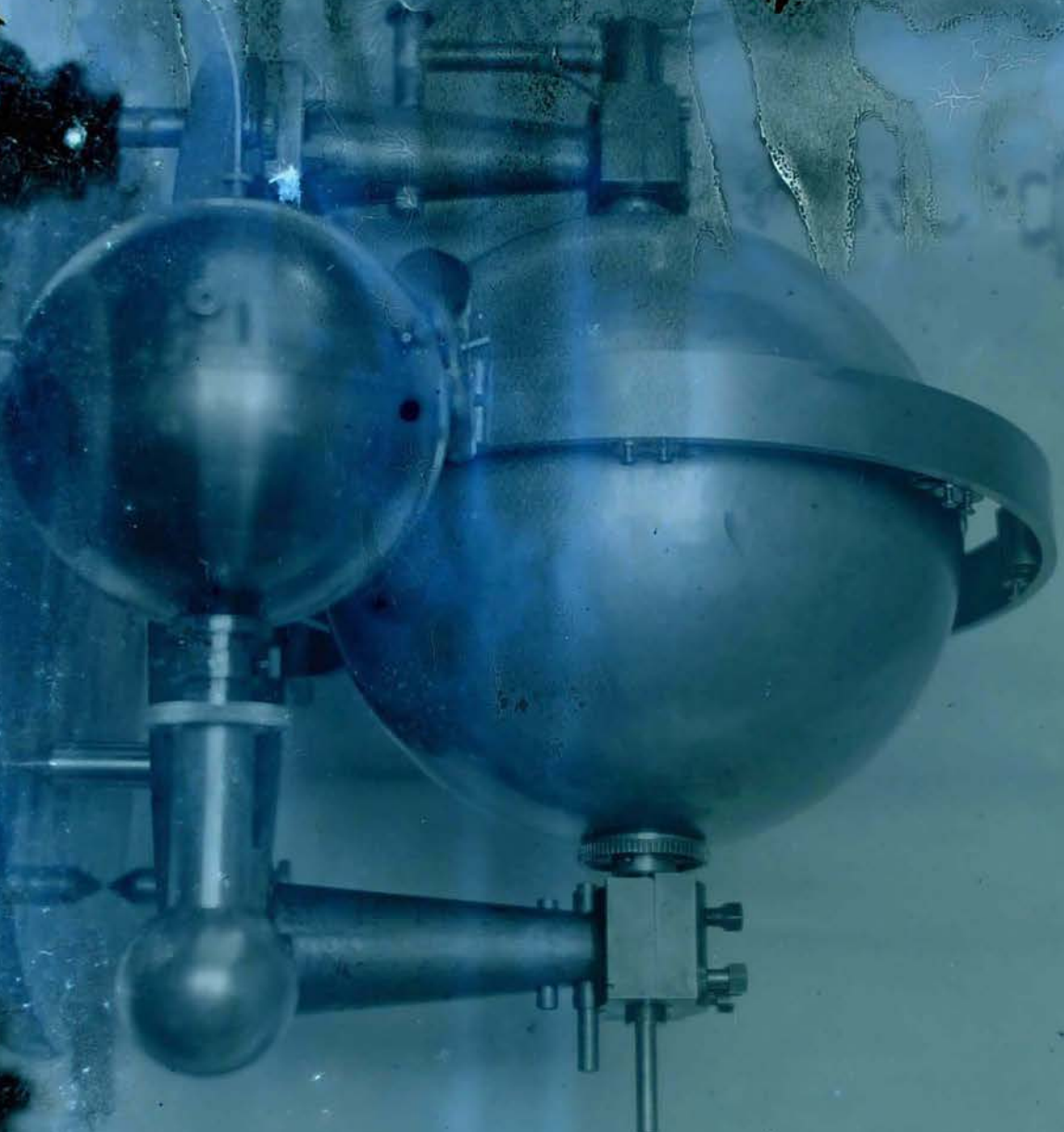
Reorder _____







No. _____
Name _____
Order _____
Remarks _____
Retouched _____
Order Finished _____
Reorder _____
Reorder _____



LAST KNOWN PHOTOGRAPH OF THE KEELY MOTOR FROM 1899

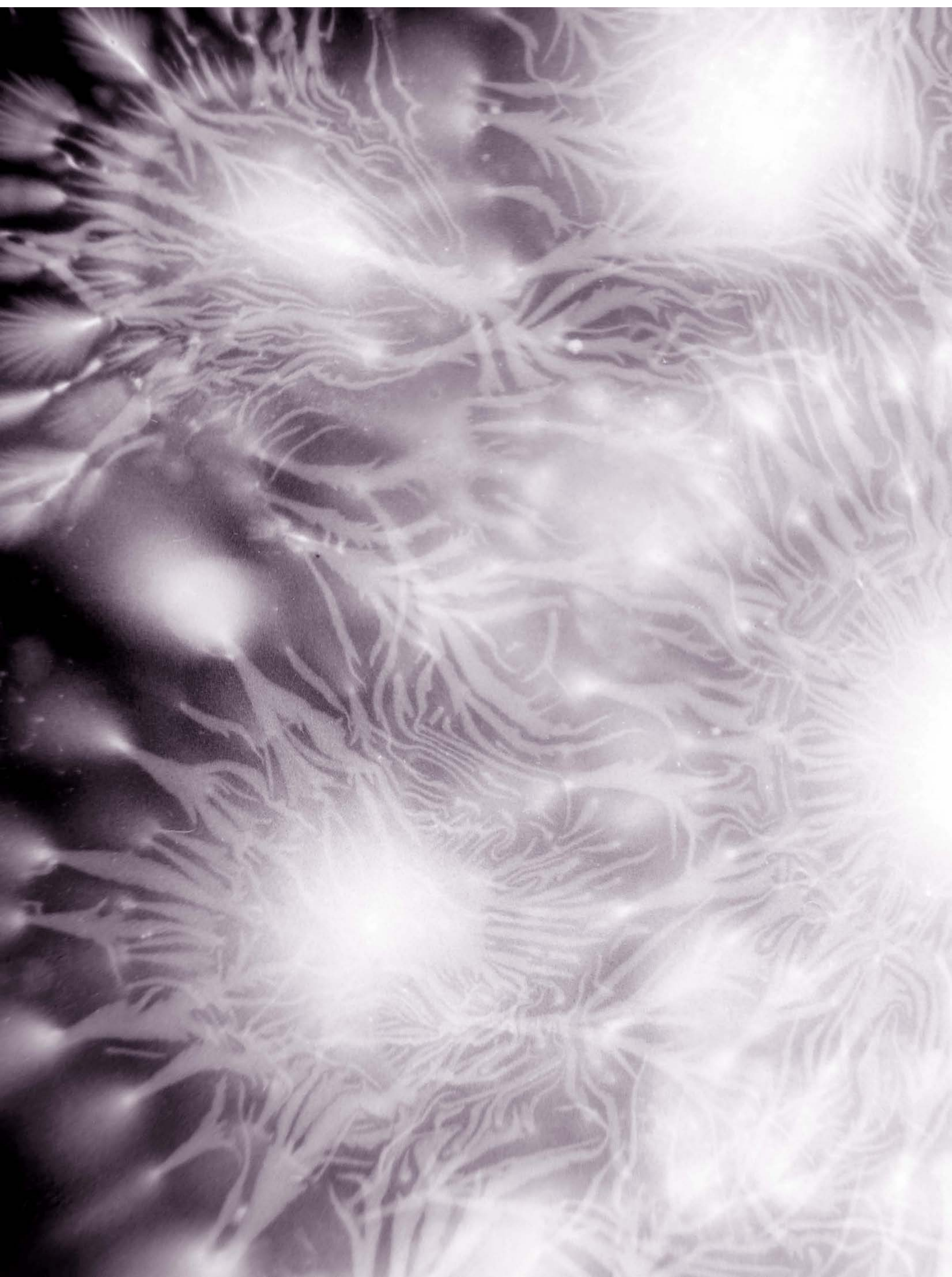
CREATED FROM THE ORIGINAL 8" X 10" GLASS PLATE NEGATIVE

RECOVERED INSIDE OF THOMAS BURTON KINRAIDE'S JAMAICA PLAIN HOME AND LABORATORY "RAVENSGROFT" 29 APRIL 2005

(C) JEFF BEHARY 2007 C/O THE TURN OF THE CENTURY ELECTROTHERAPY MUSEUM











COPYRIGHT 1900

BY T. B. KINRAIDE, NO. 36.

No. 36.

THE ENTITY OF ELECTRICITY.

(Enlarged)

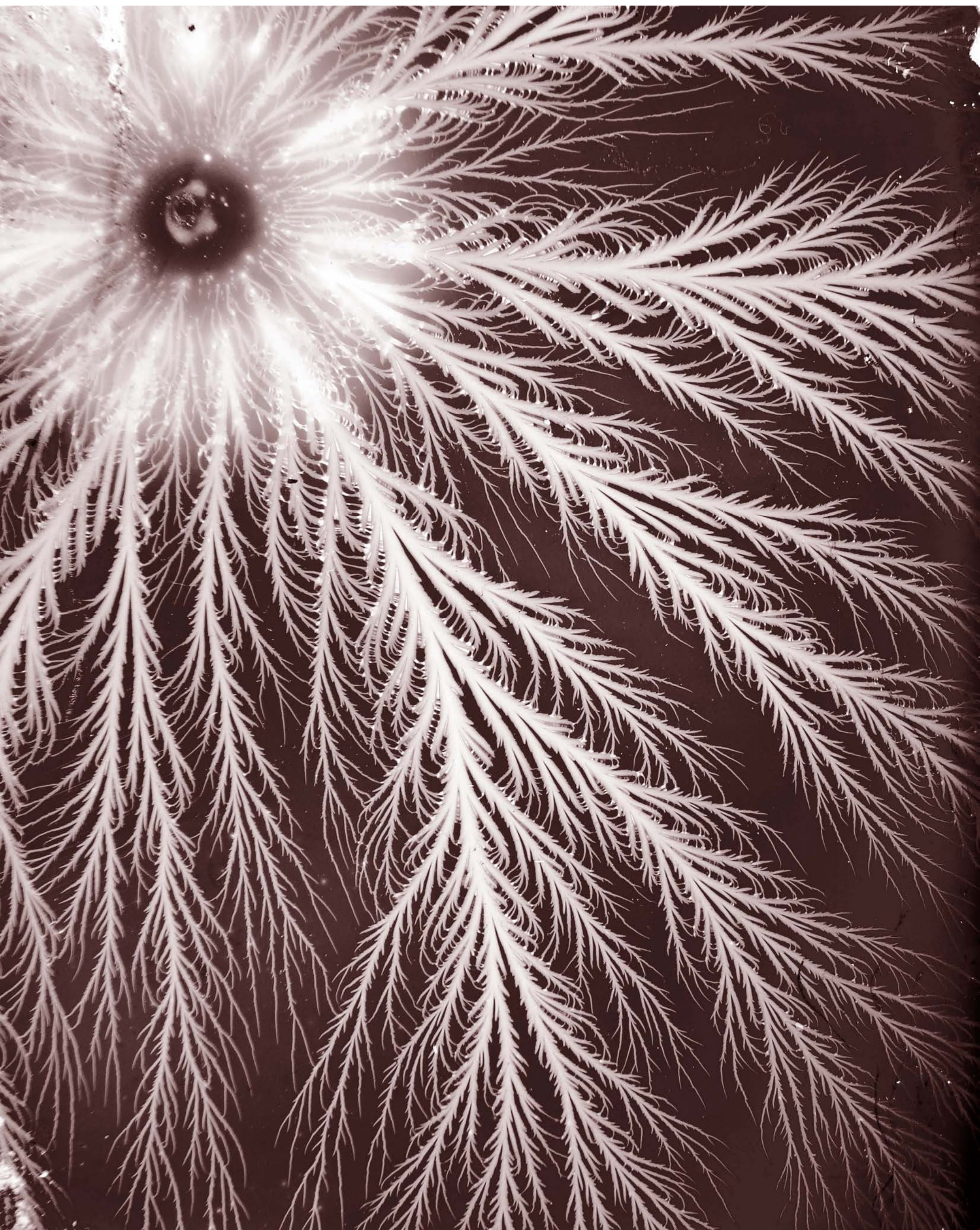
The embodiment of the triple Phase of Electricity. An autographic record of a developing entity of energy. Its Focalization or negative phase; its dynamic or magnetic phase; its diffusion or Positive phase.

The withdrawal of electricity from a portion of a charged condenser surface produces a negative condition relative to the rest of the surface. The Electric force in its change from the Positive to the Negative condition causes the development of the Electric entity. The Negative phase of the entity has its origin and end on the Positive, whilst the Positive phase begins and ends in the negative condition of the plate's surface. The dynamic or magnetic unites the two opposites phases.

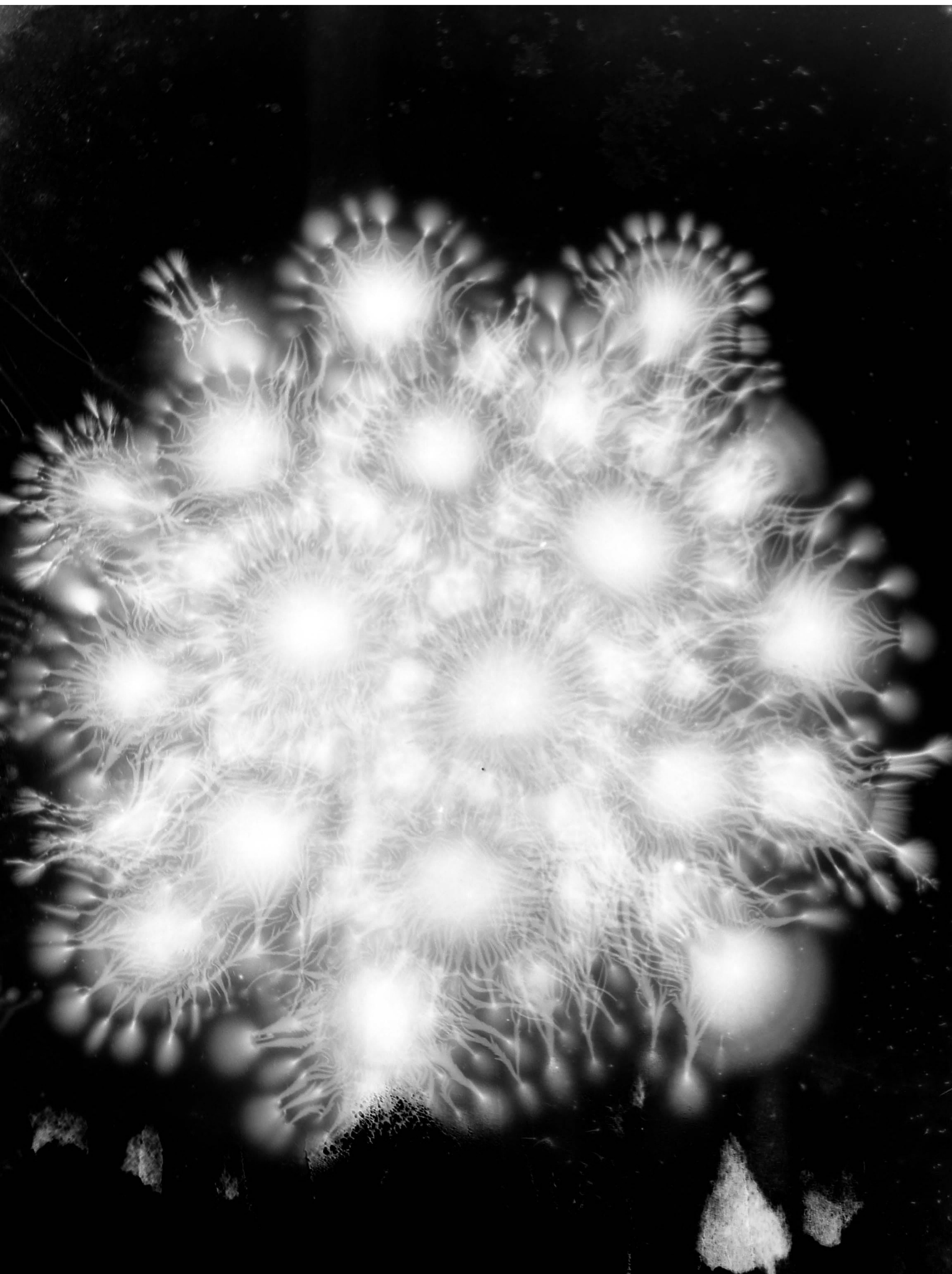
Condenser Series.

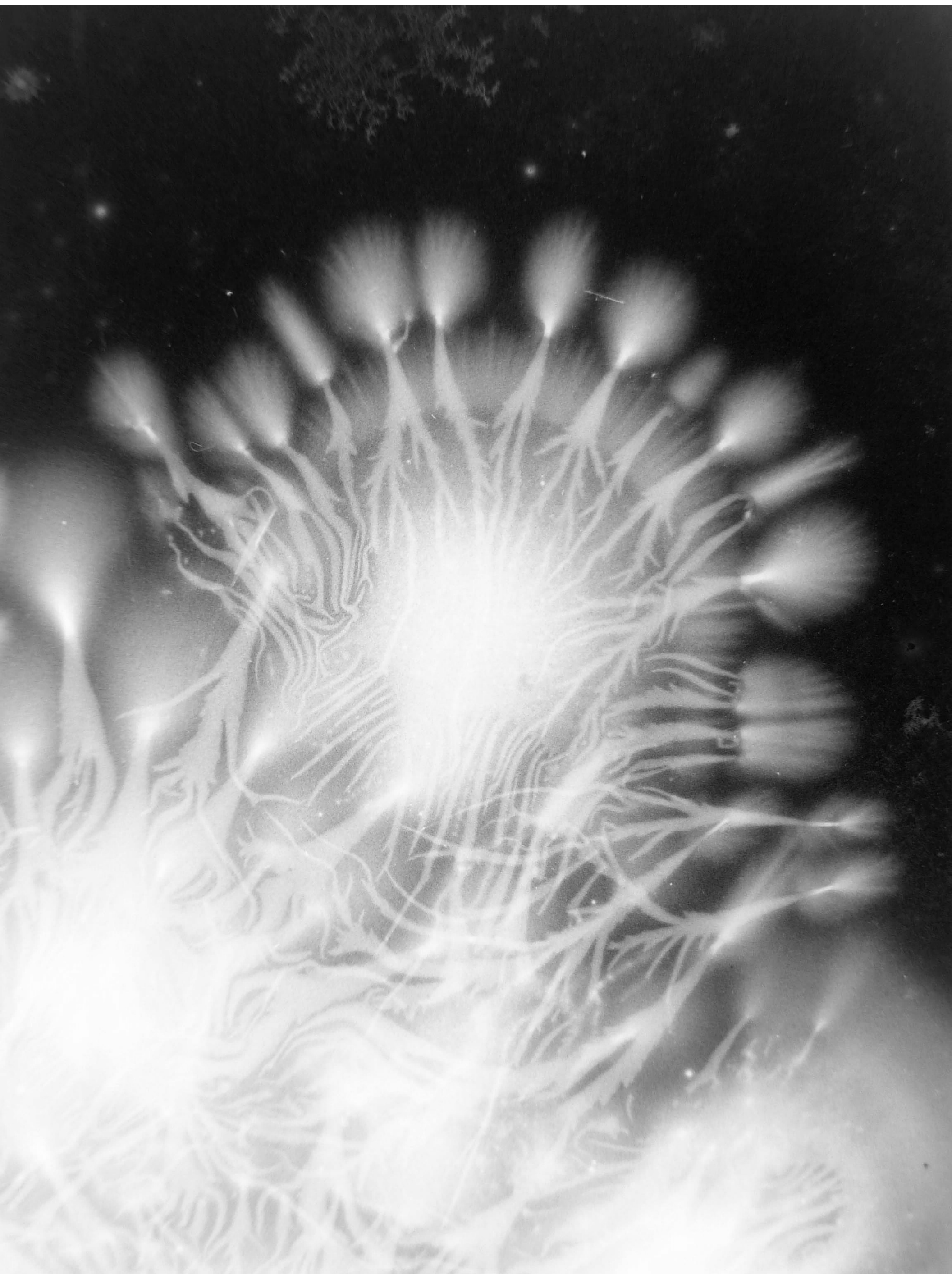
No. _____
Name _____
Order _____
Remarks _____
Retouched _____
Order Finished _____
Reorder _____
Reorder _____





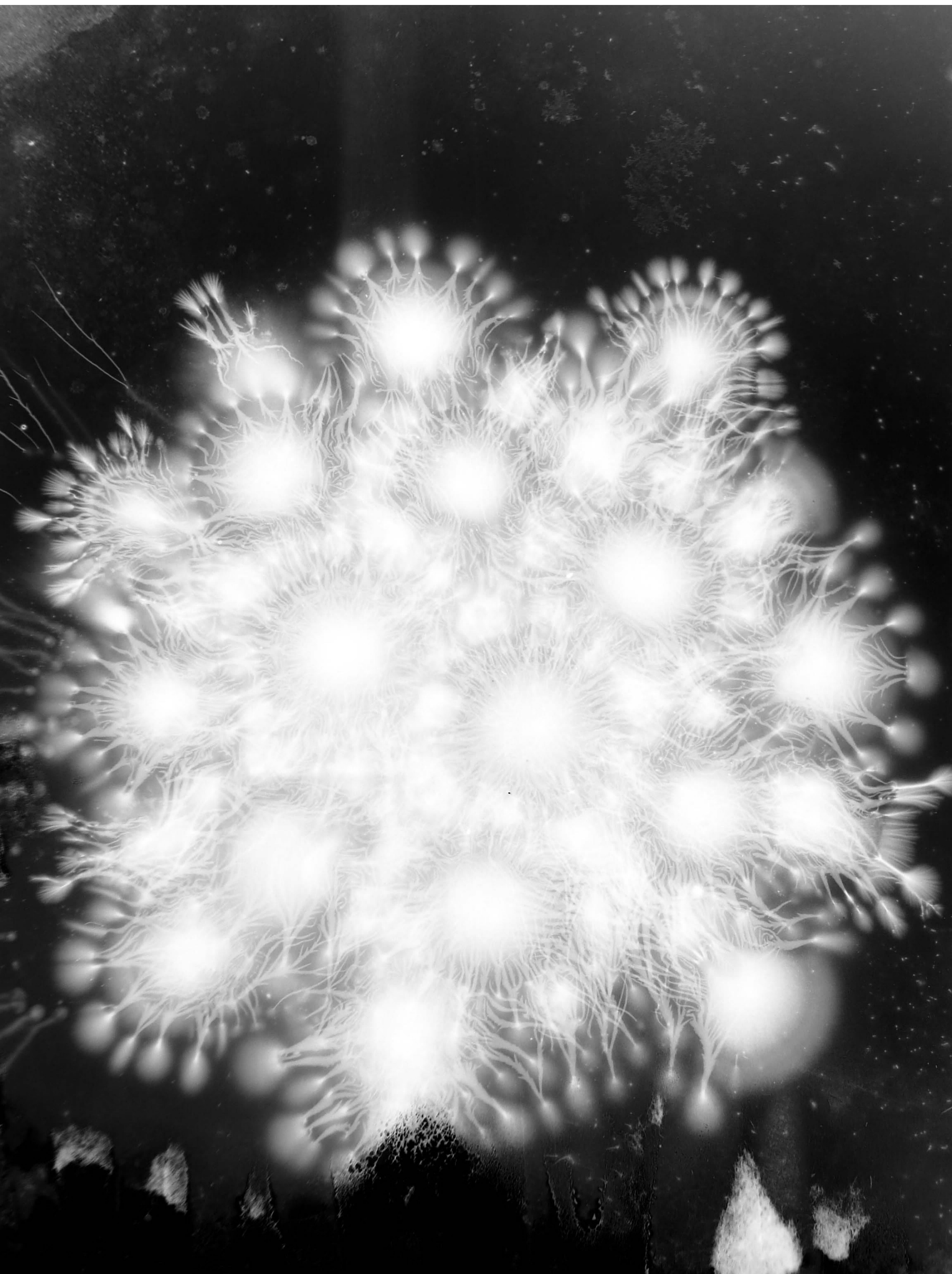








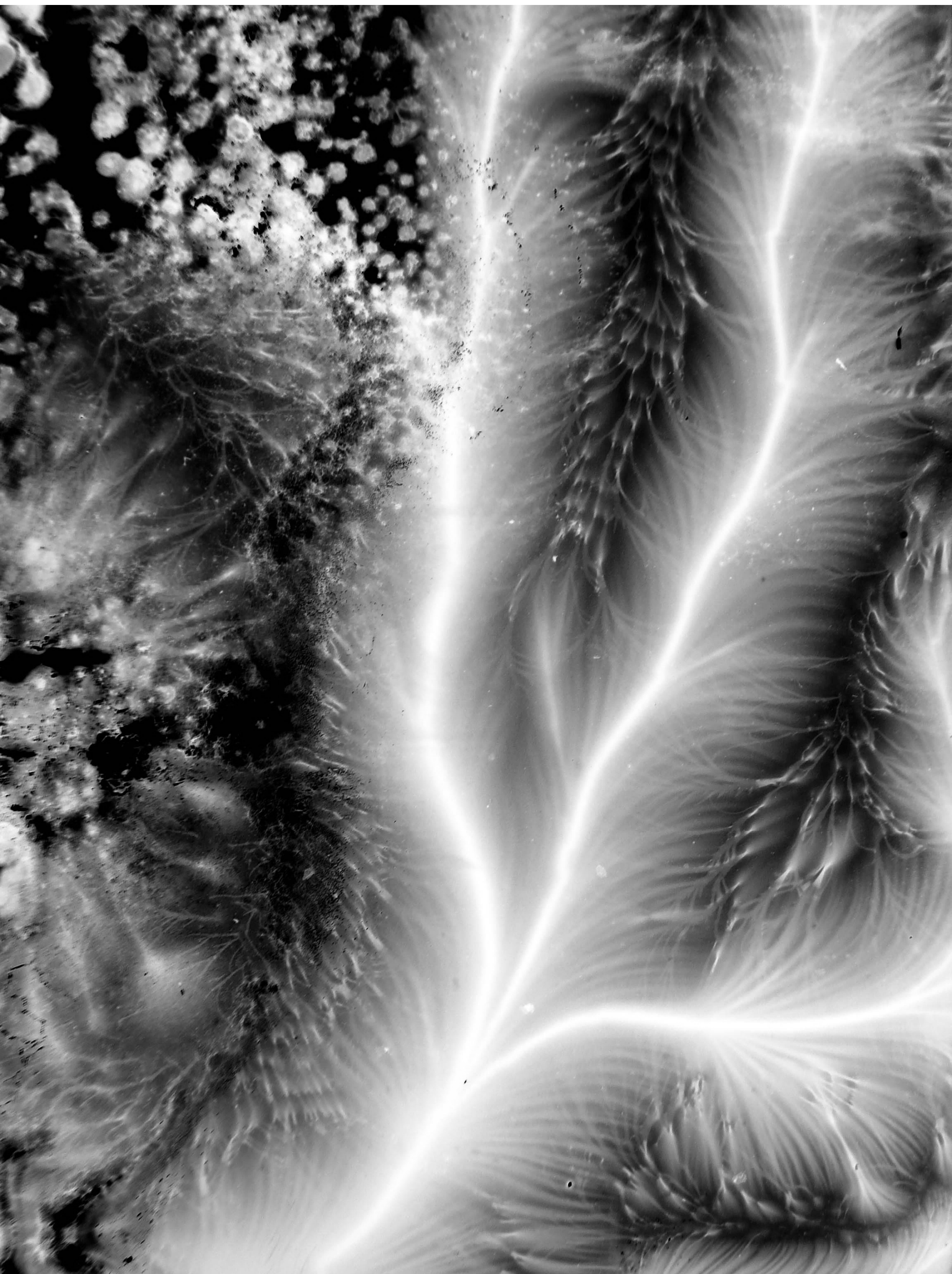






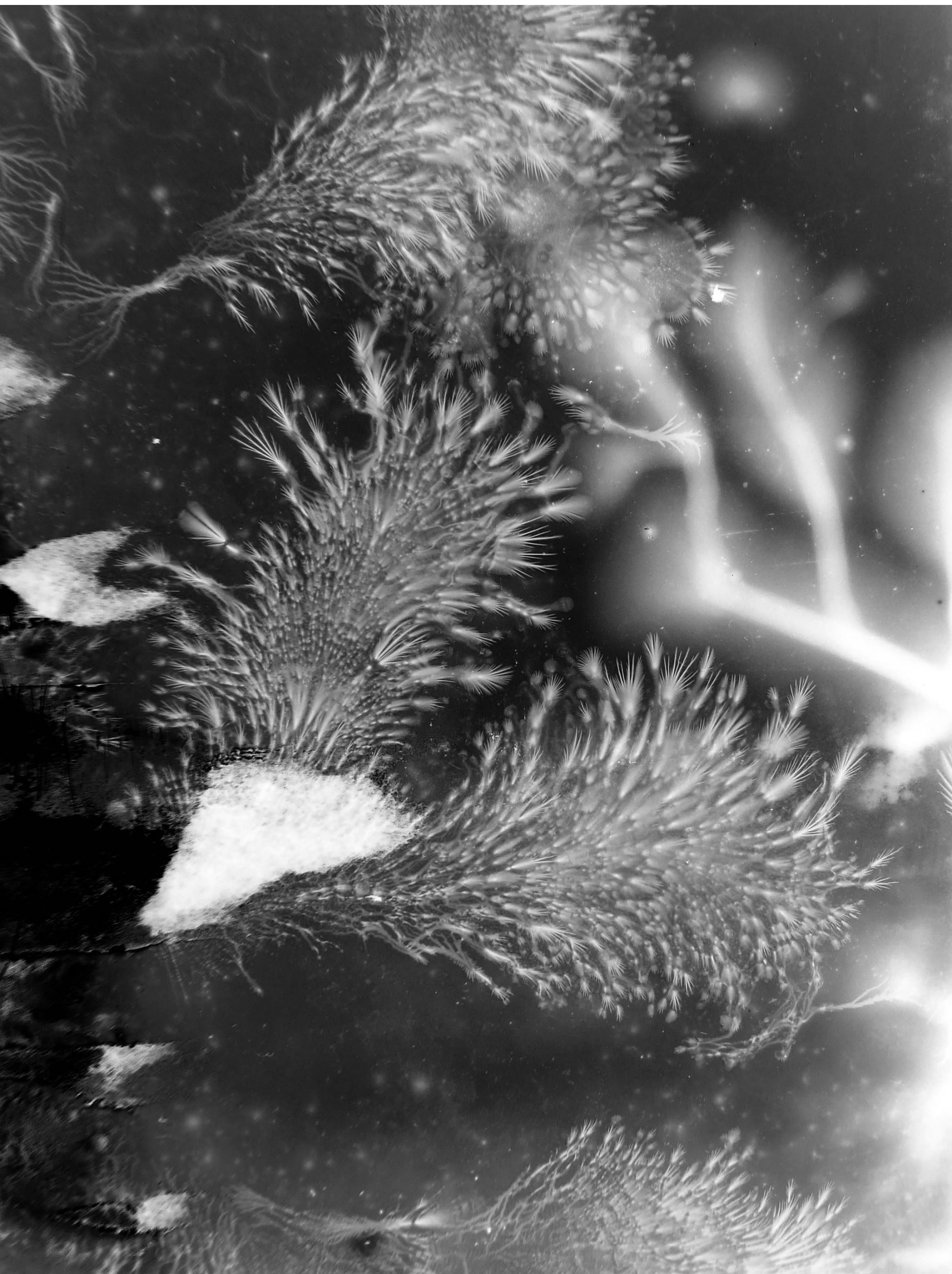




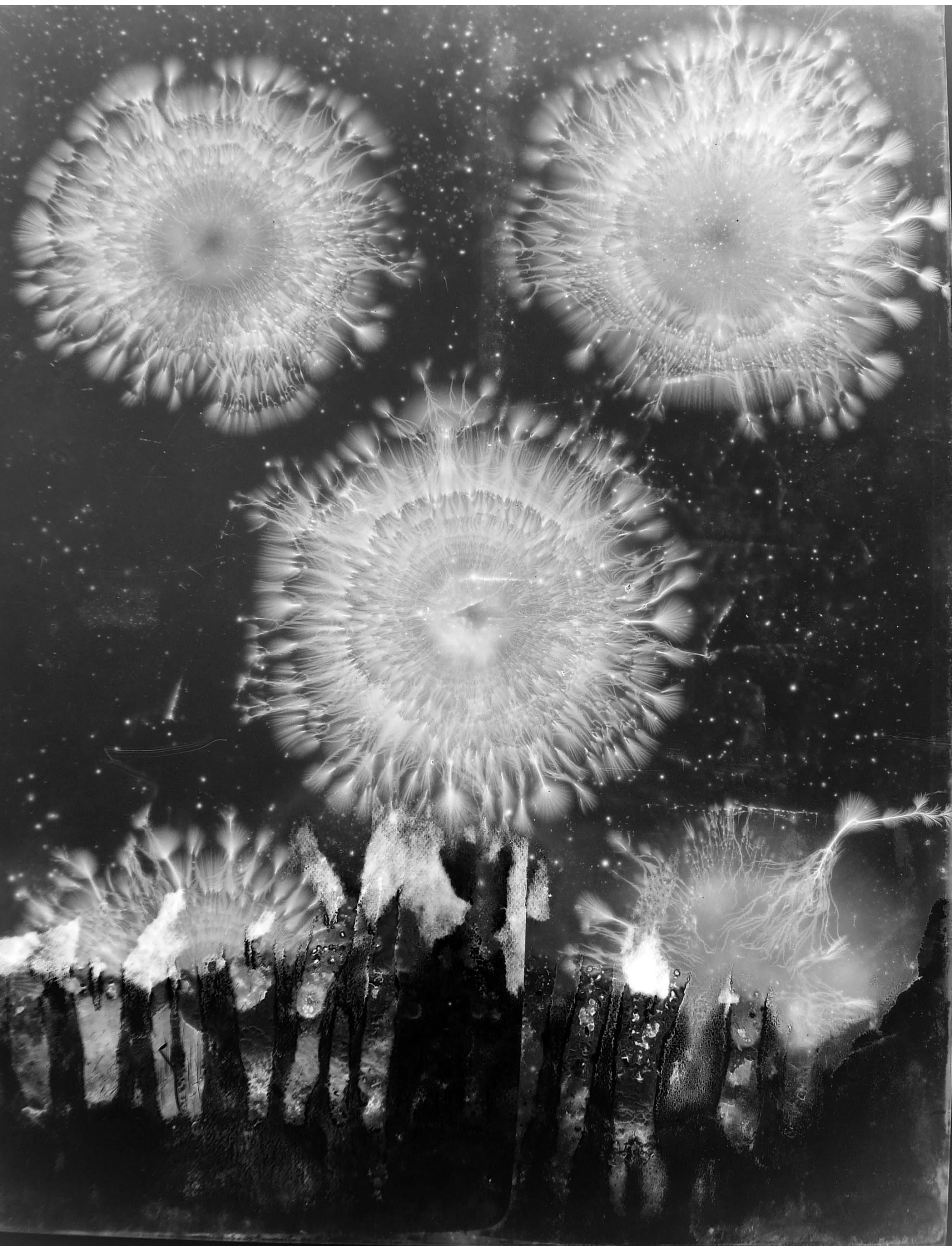












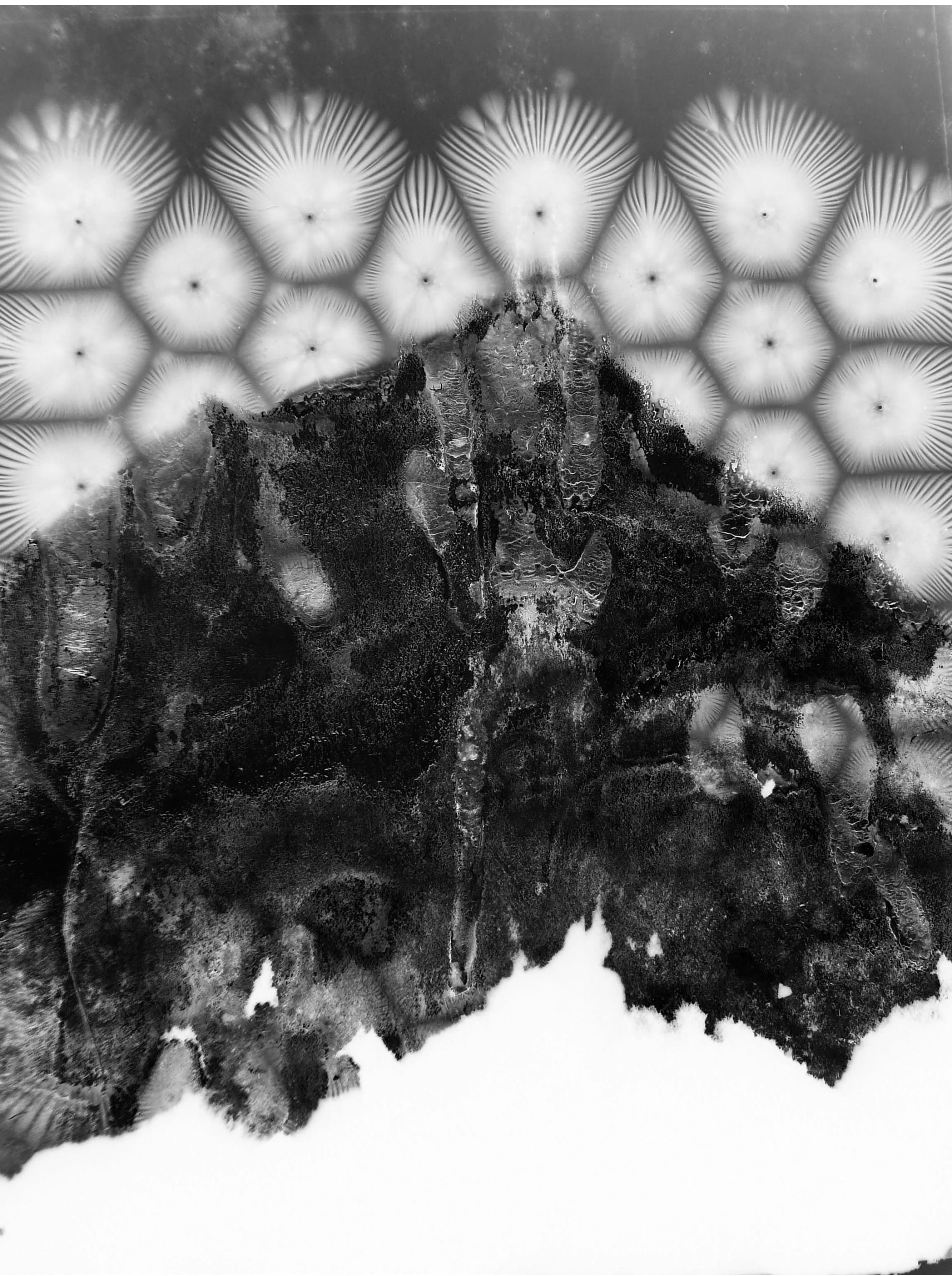


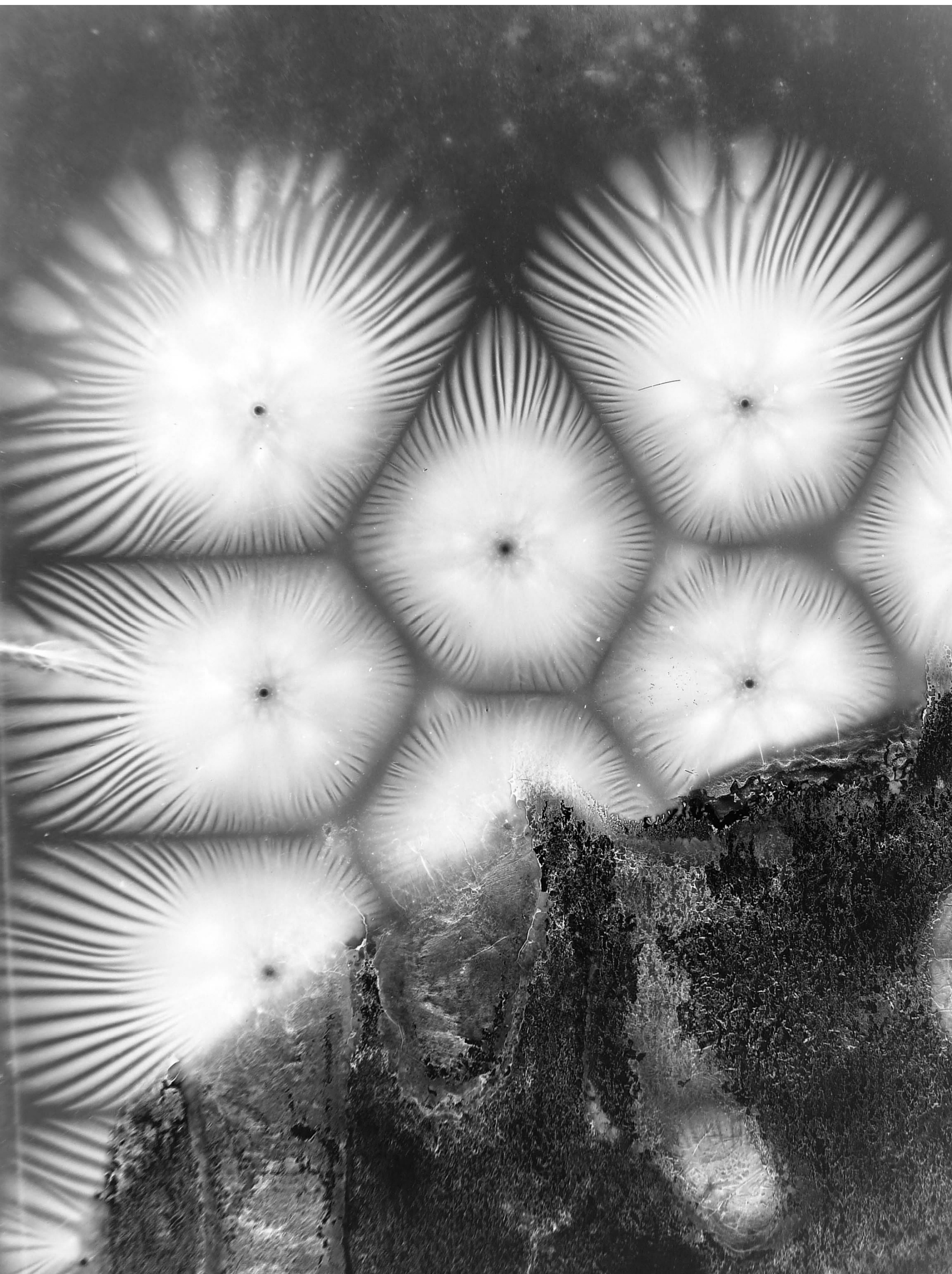


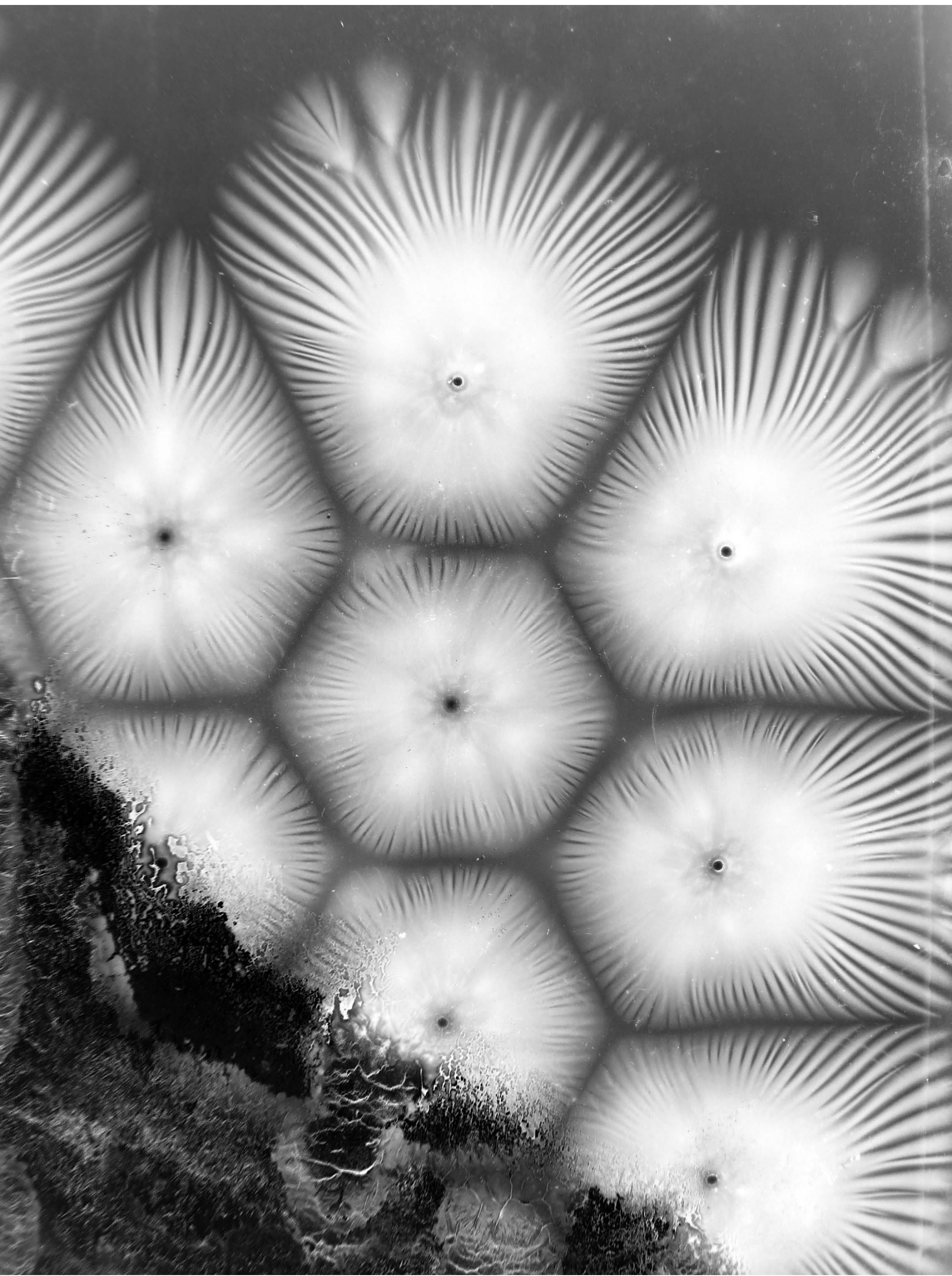




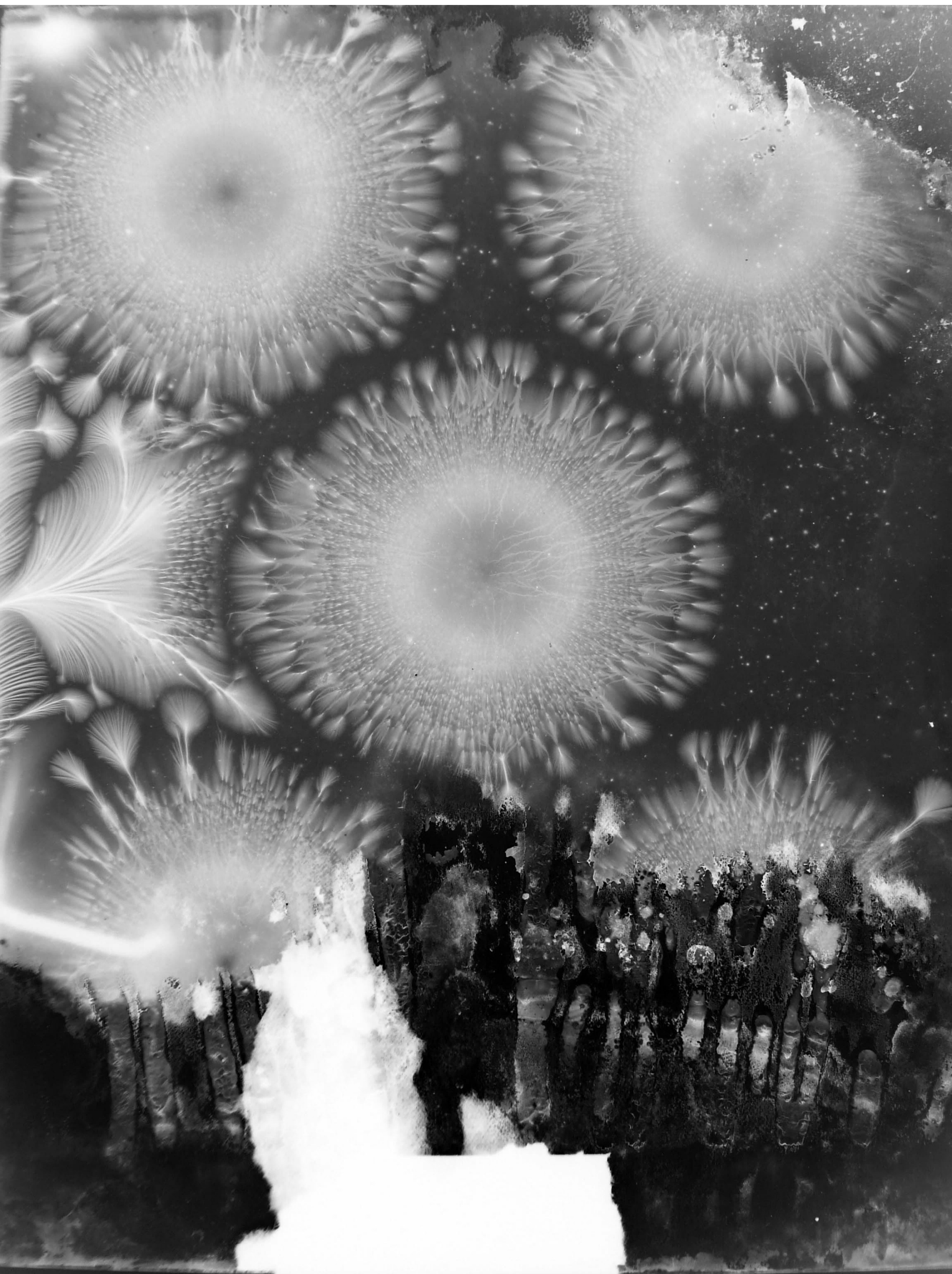


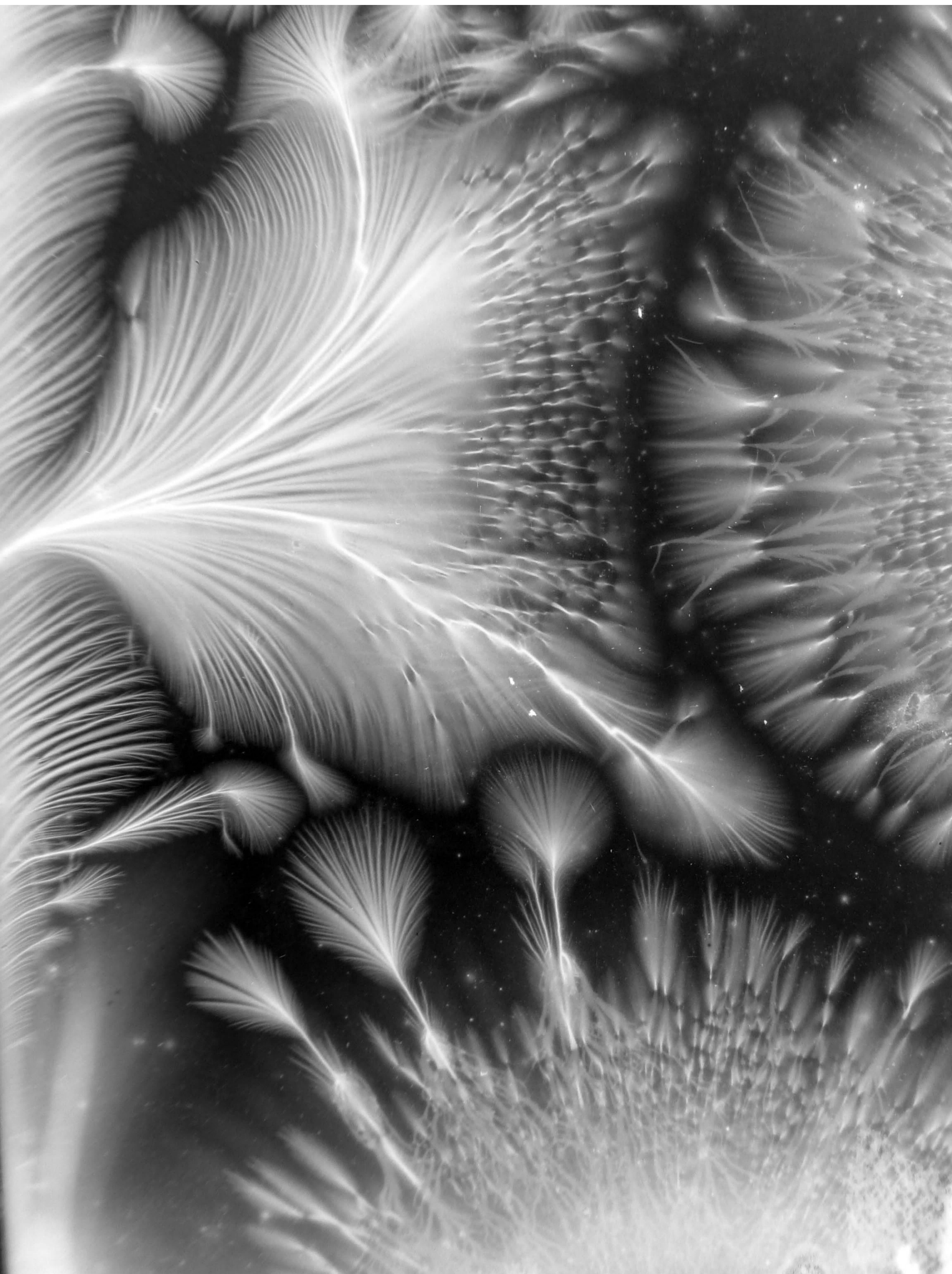


























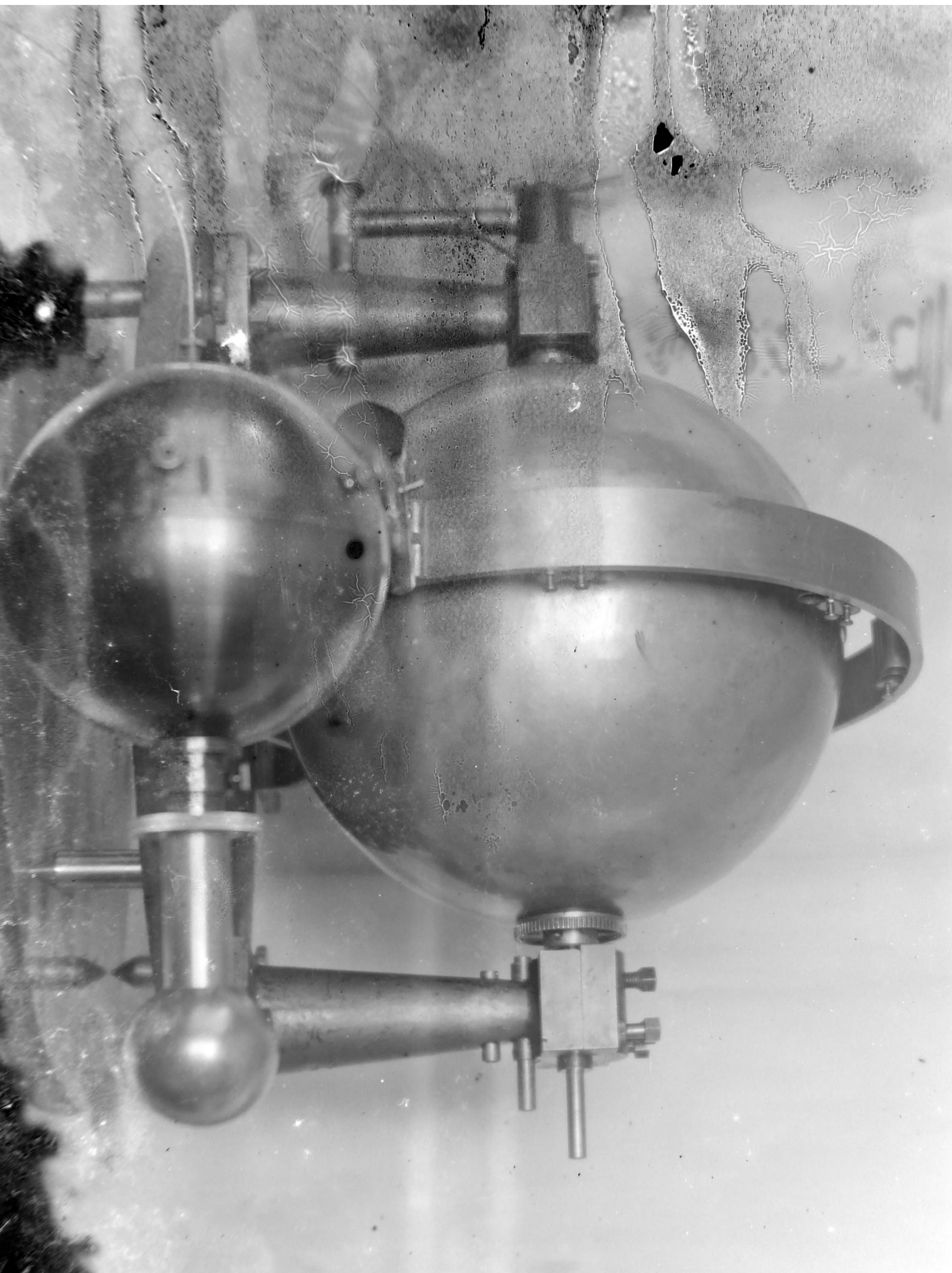














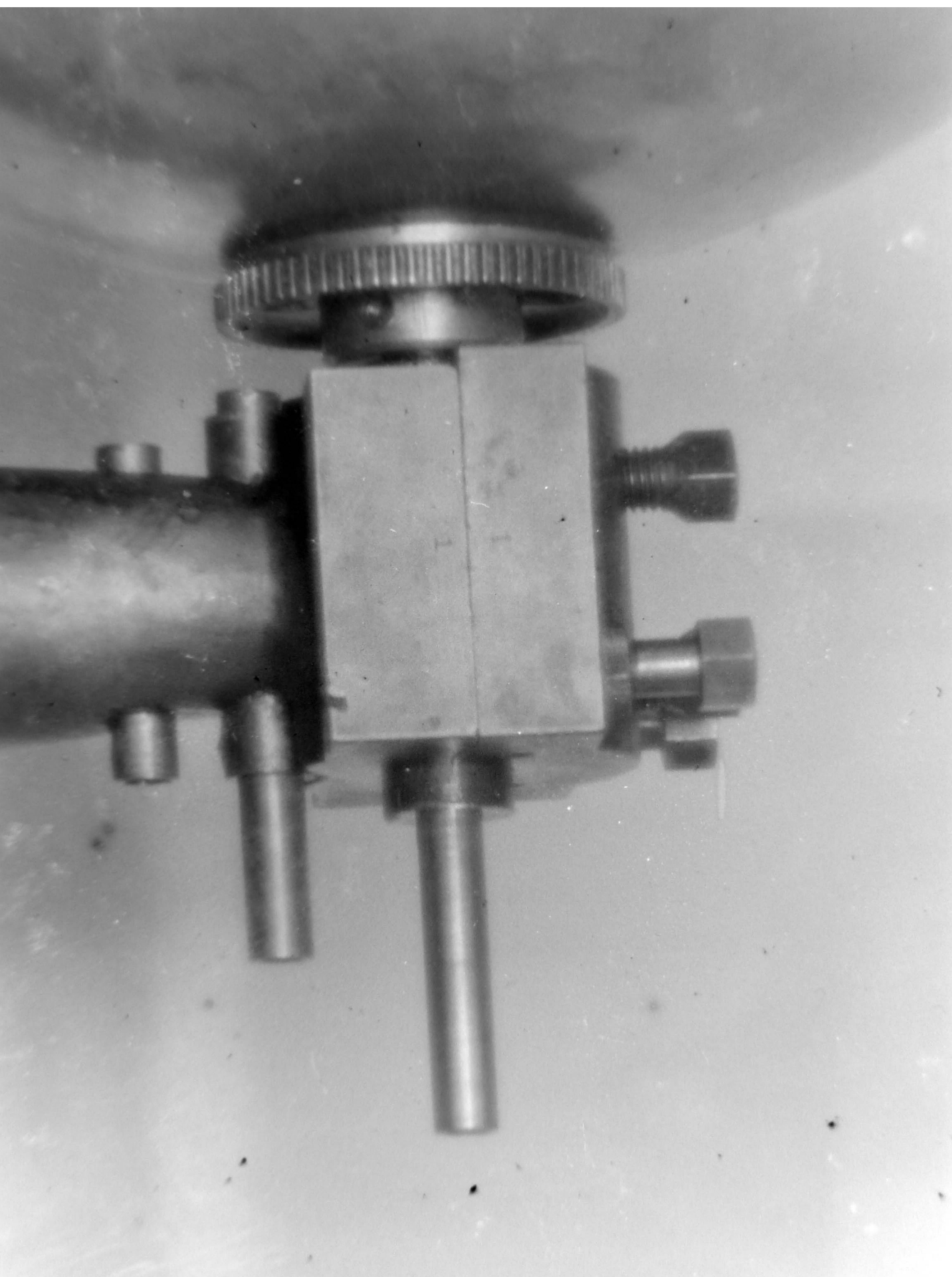


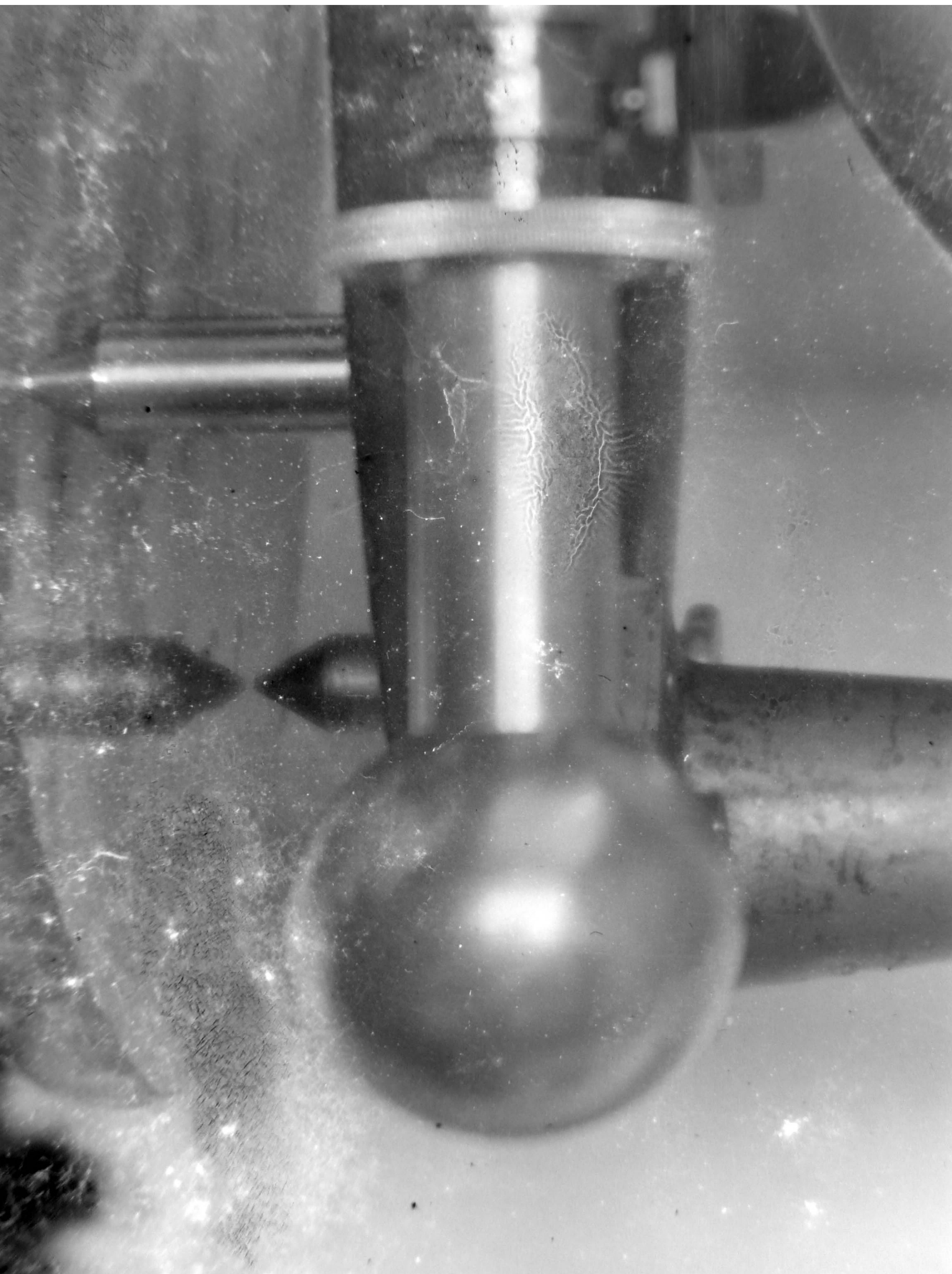








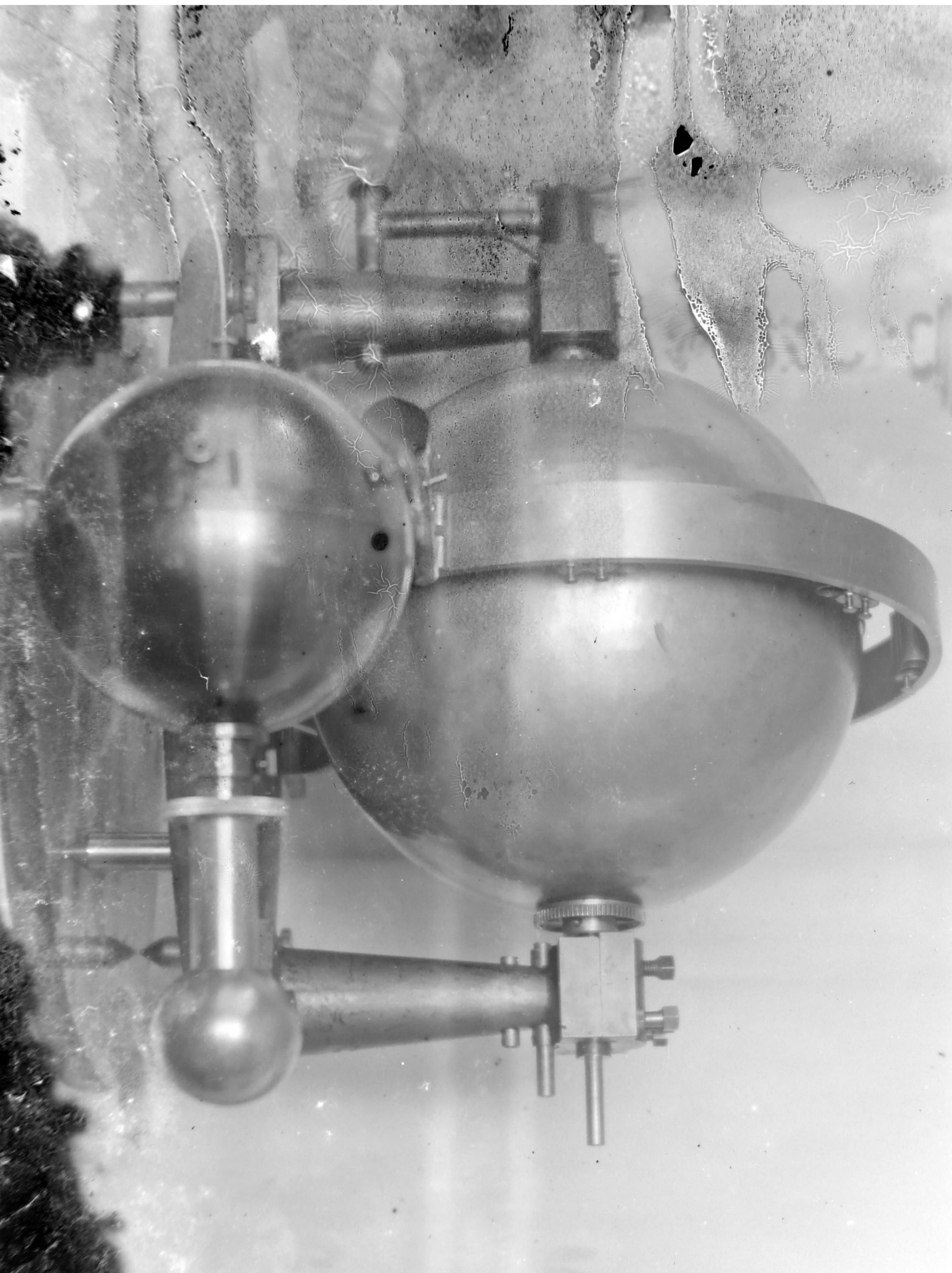




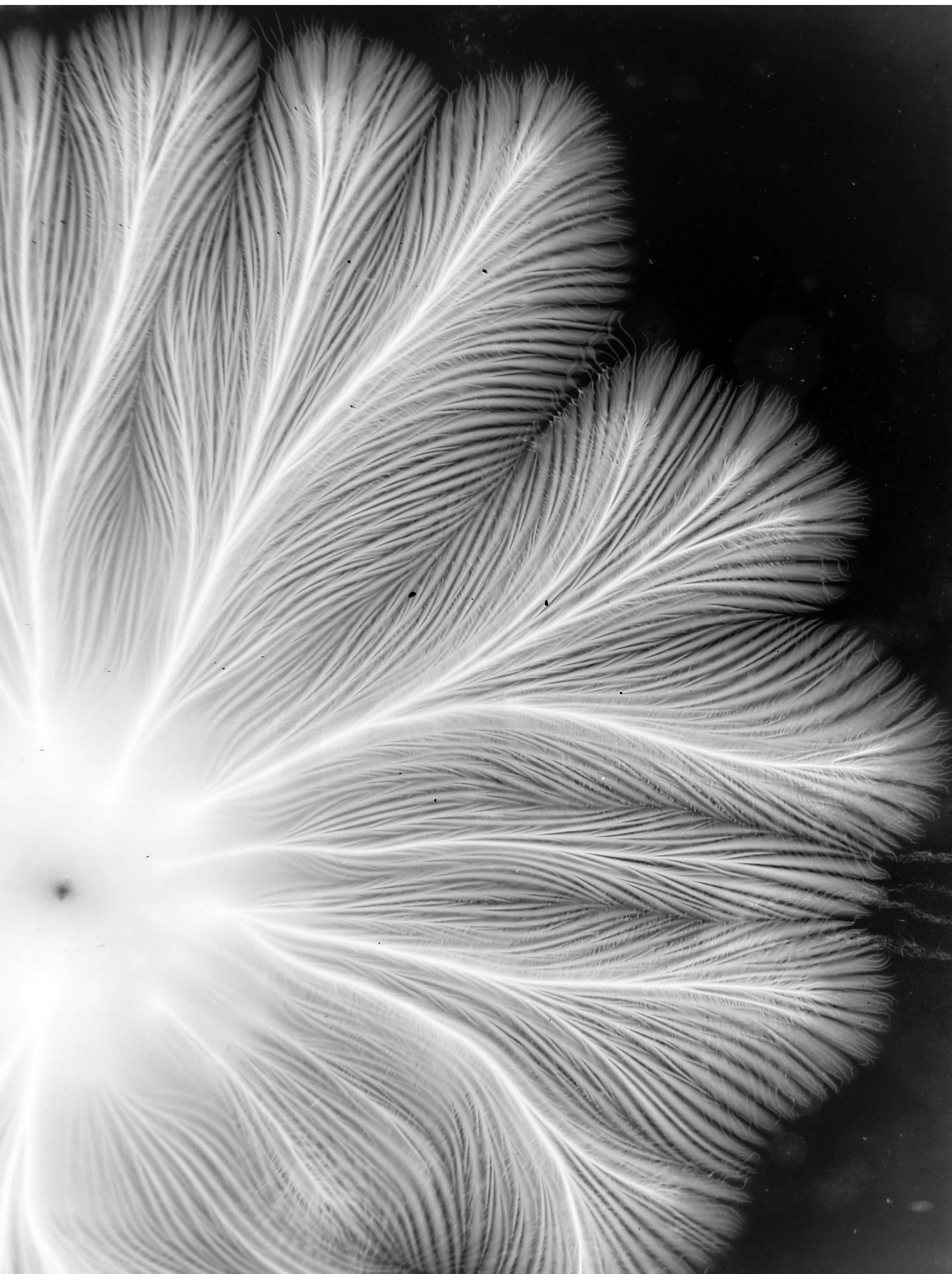


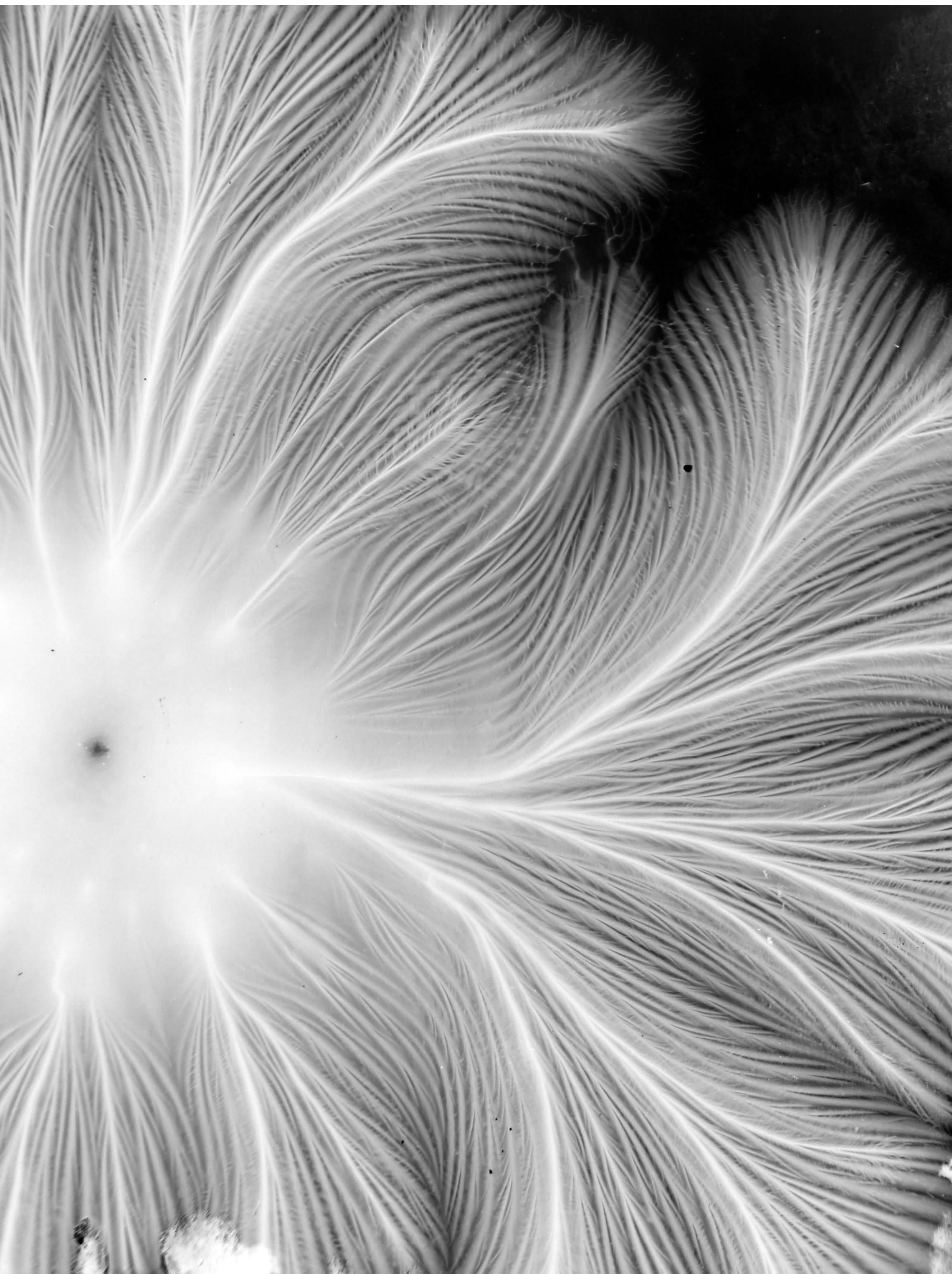






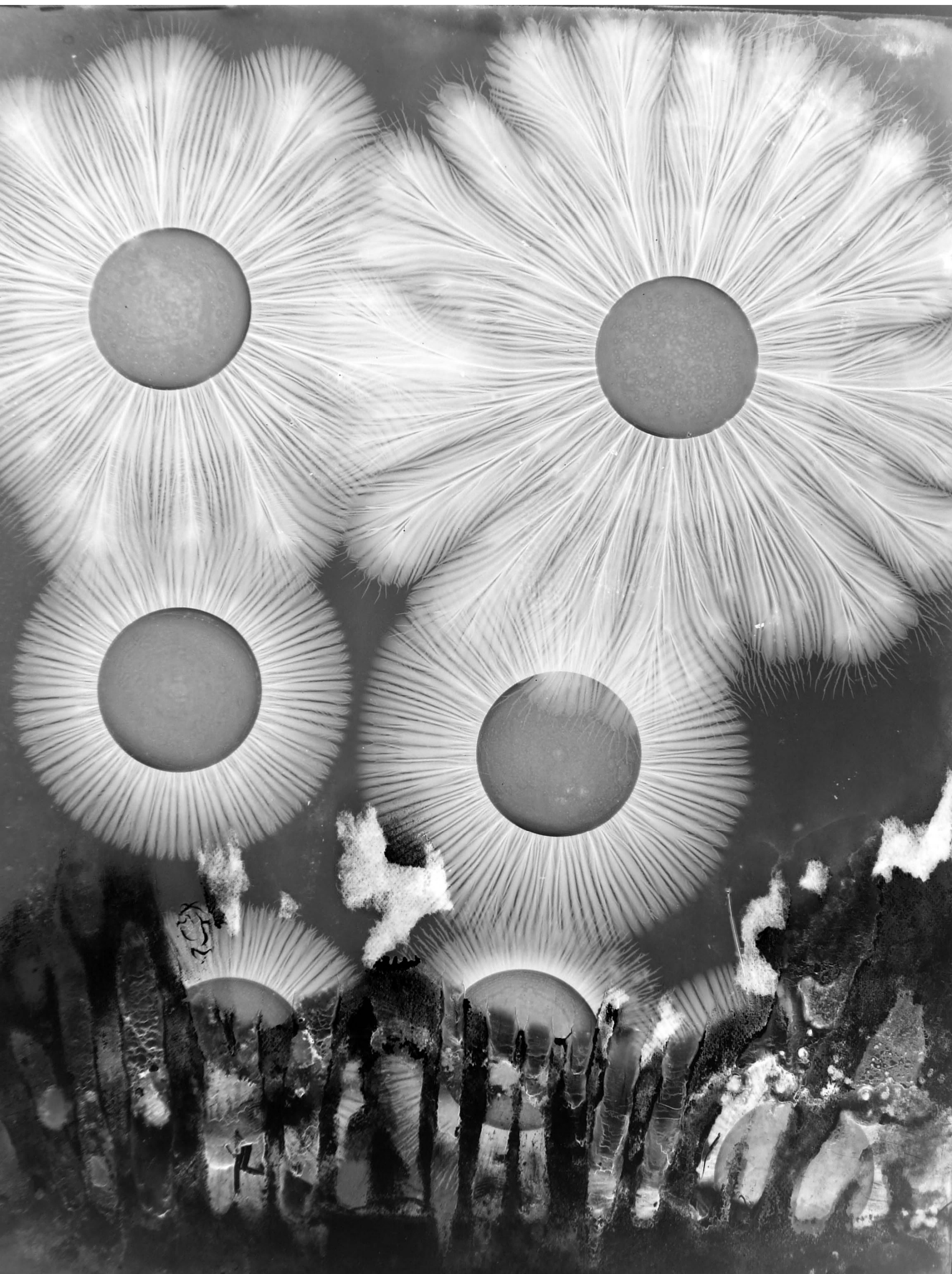


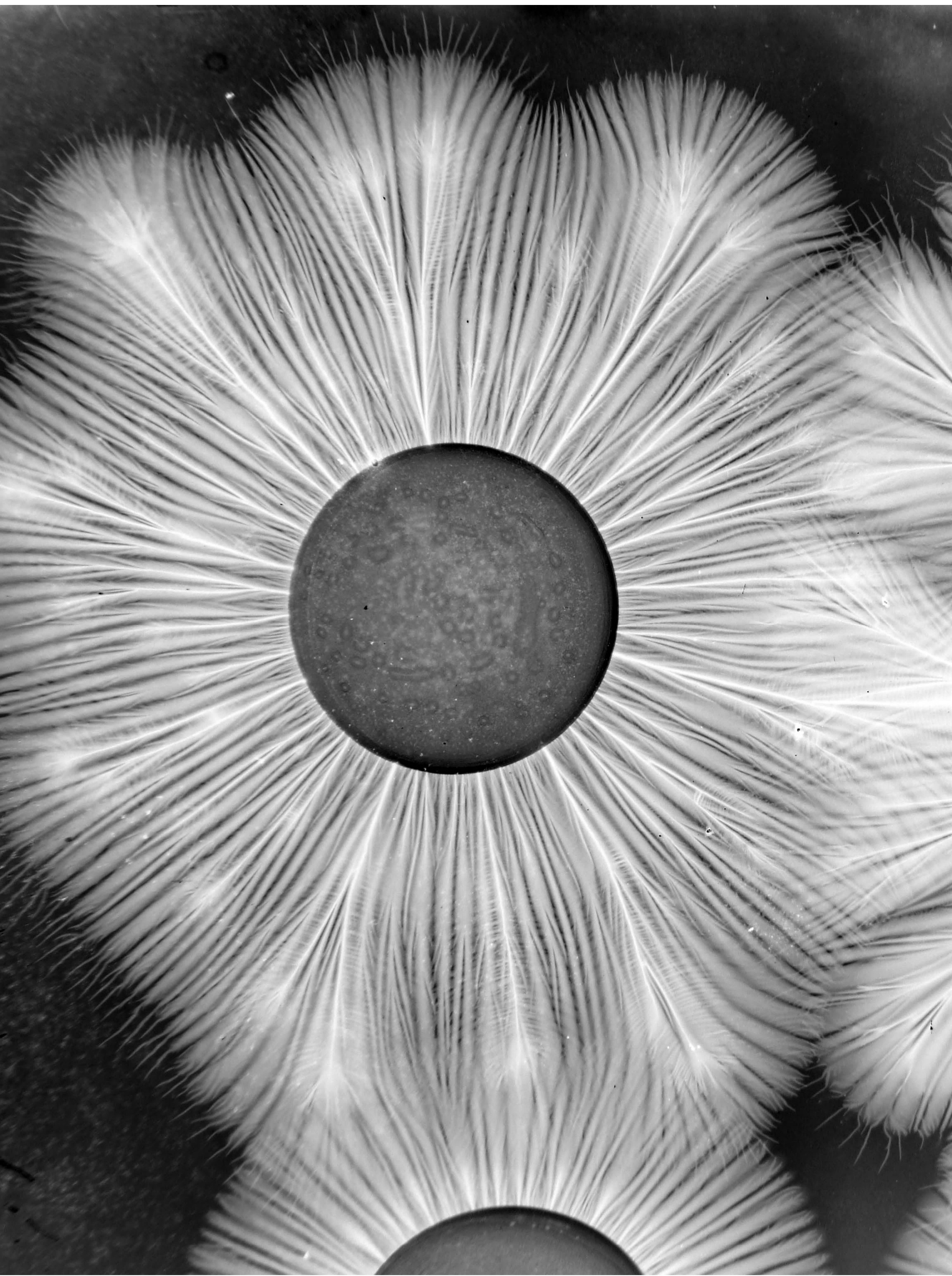






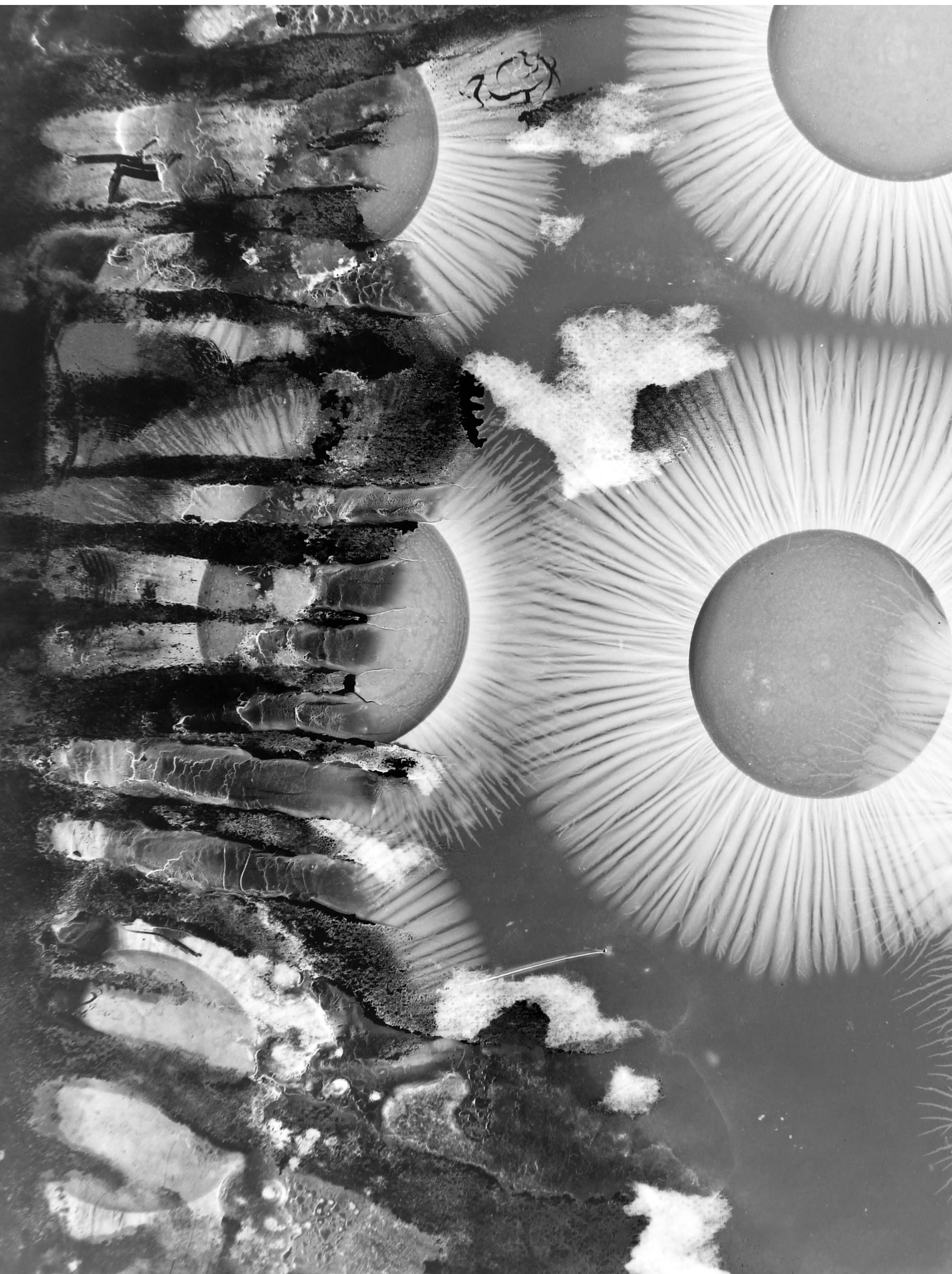


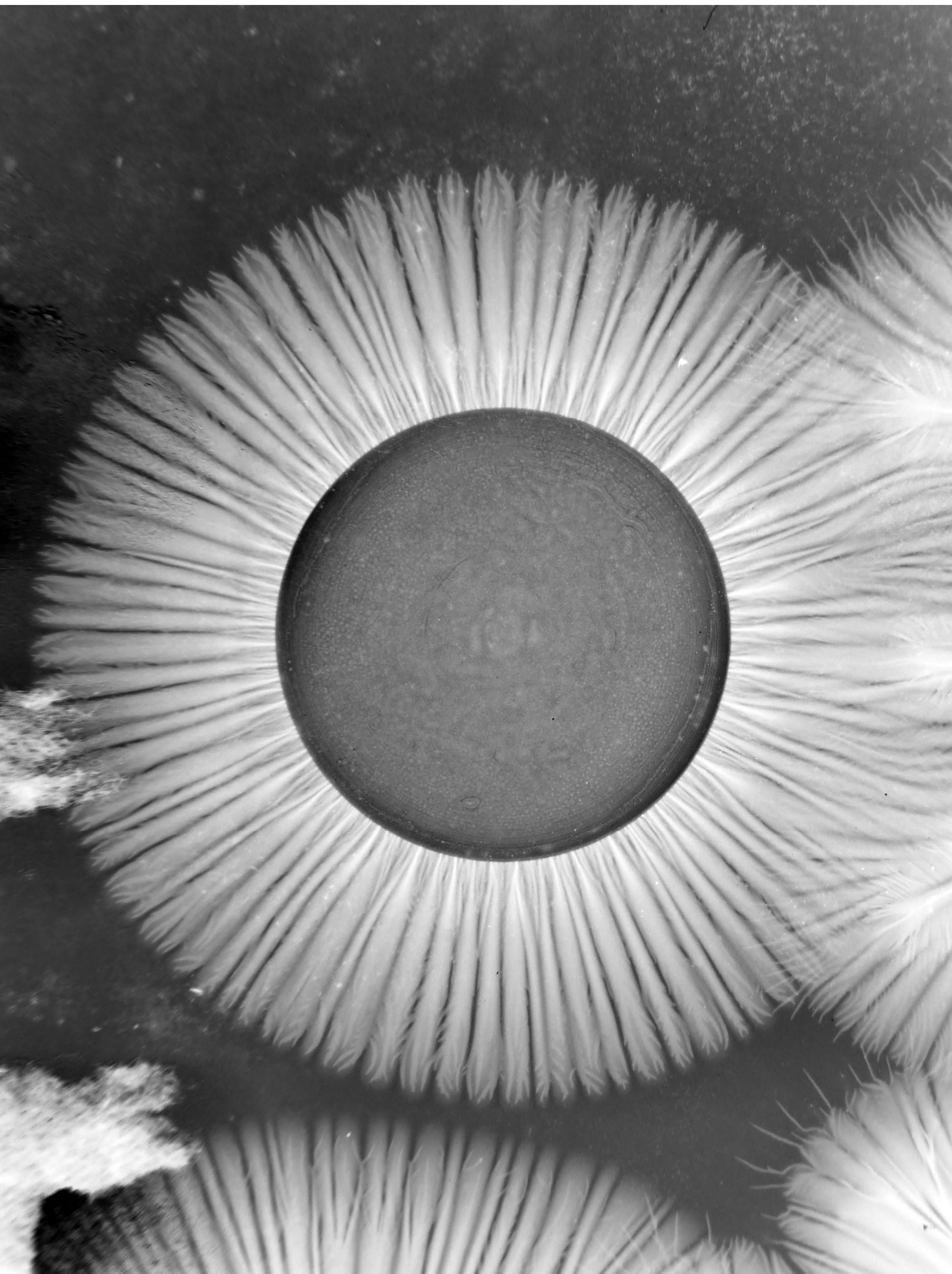










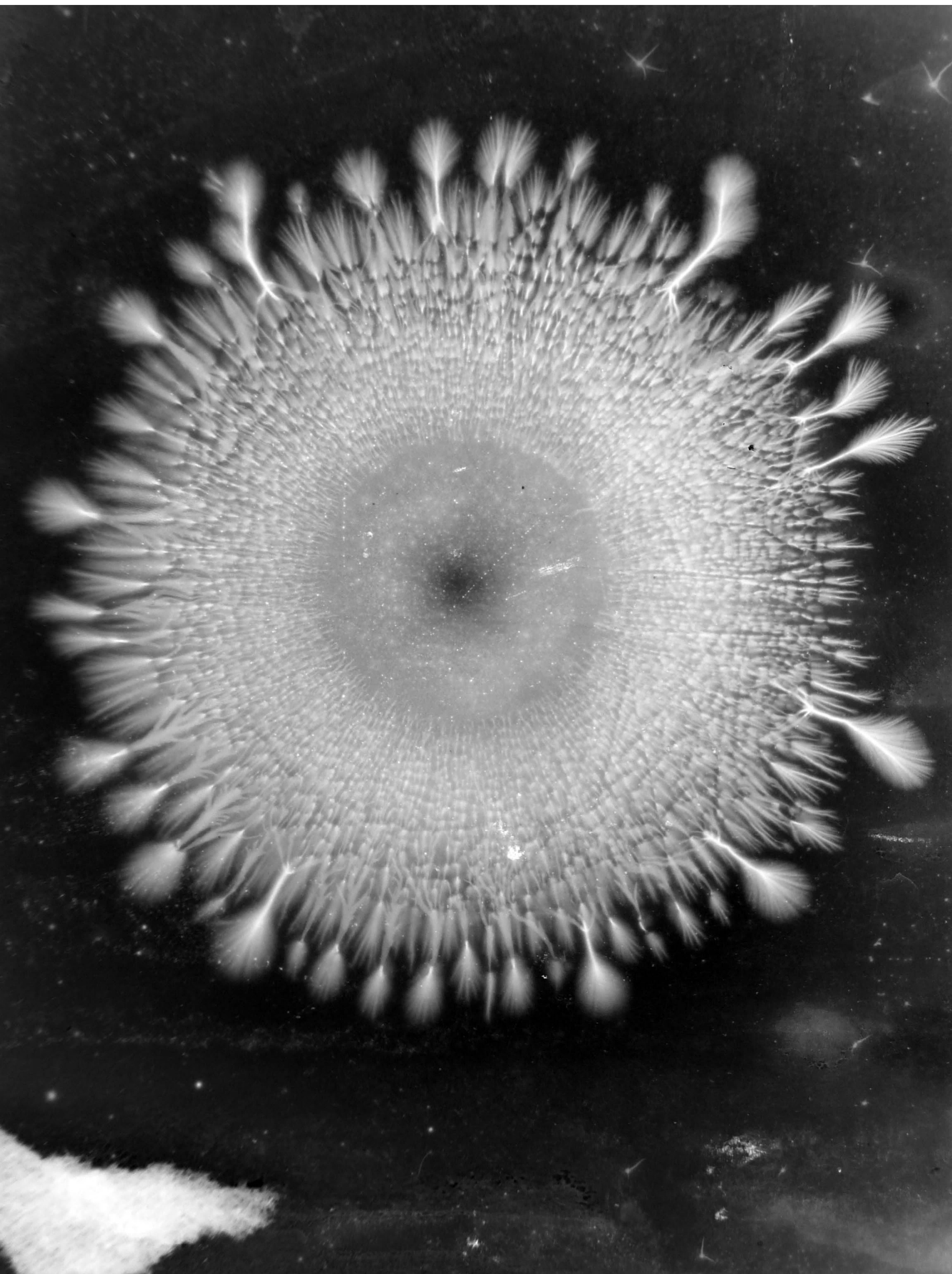








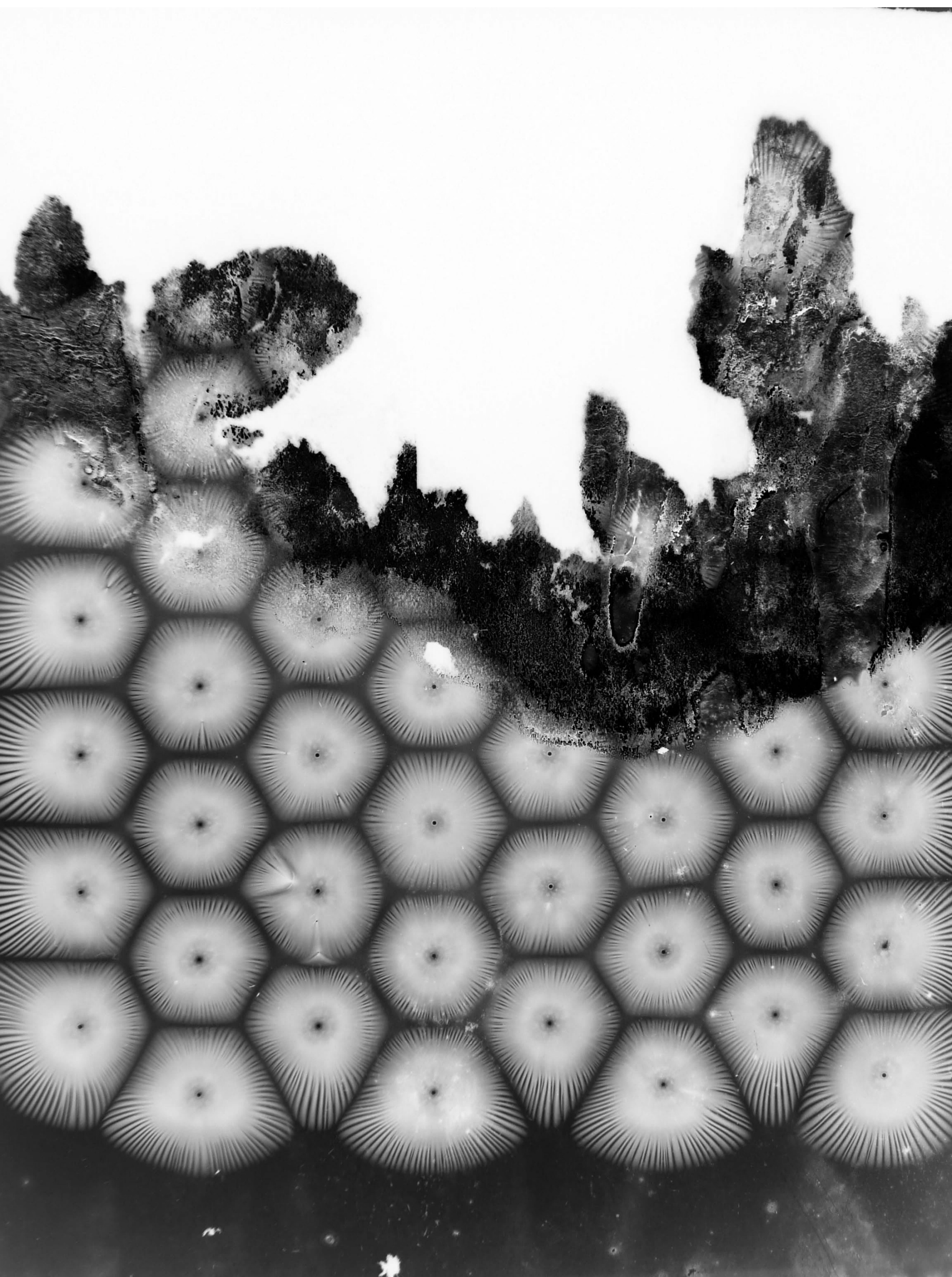


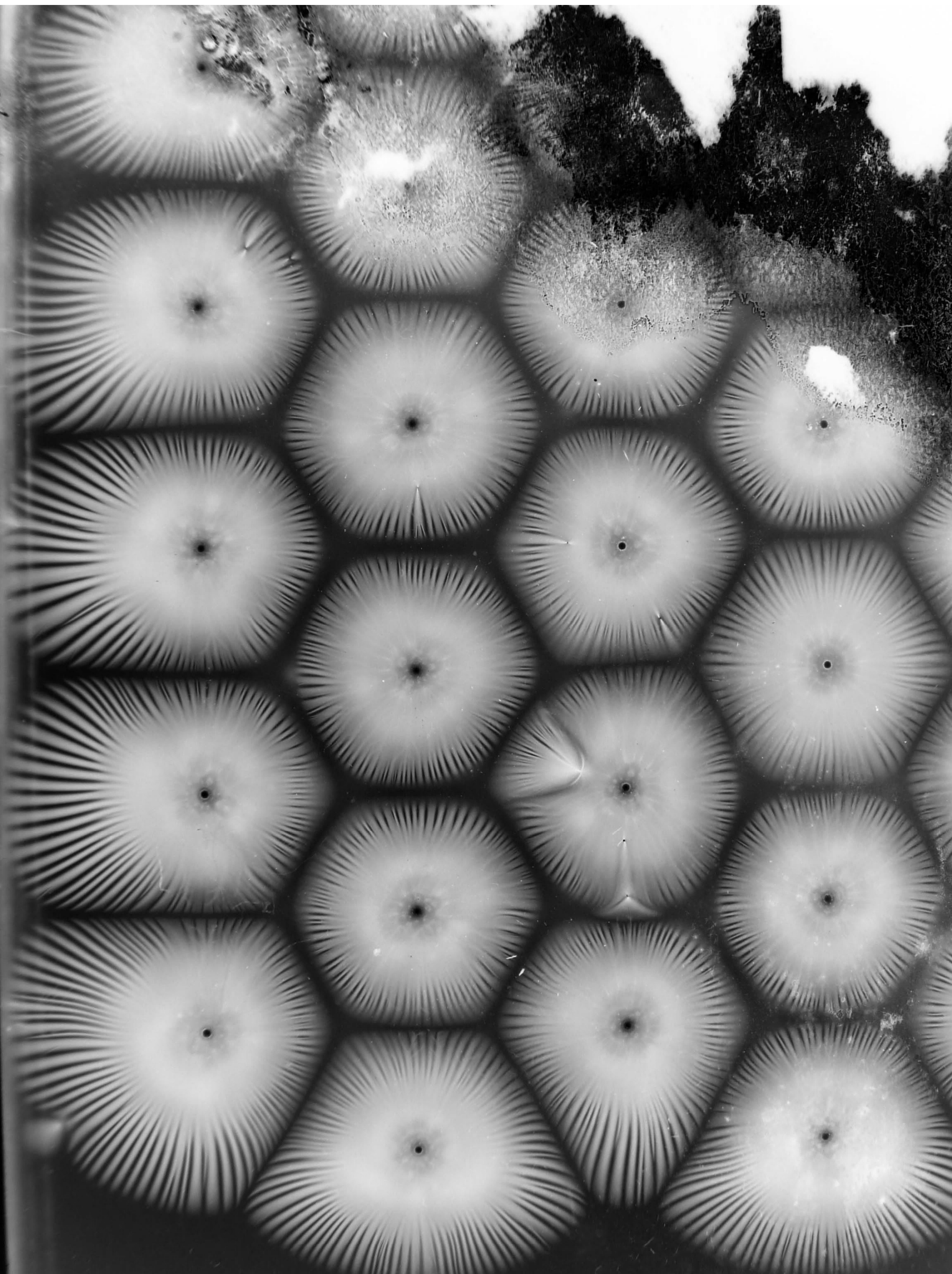




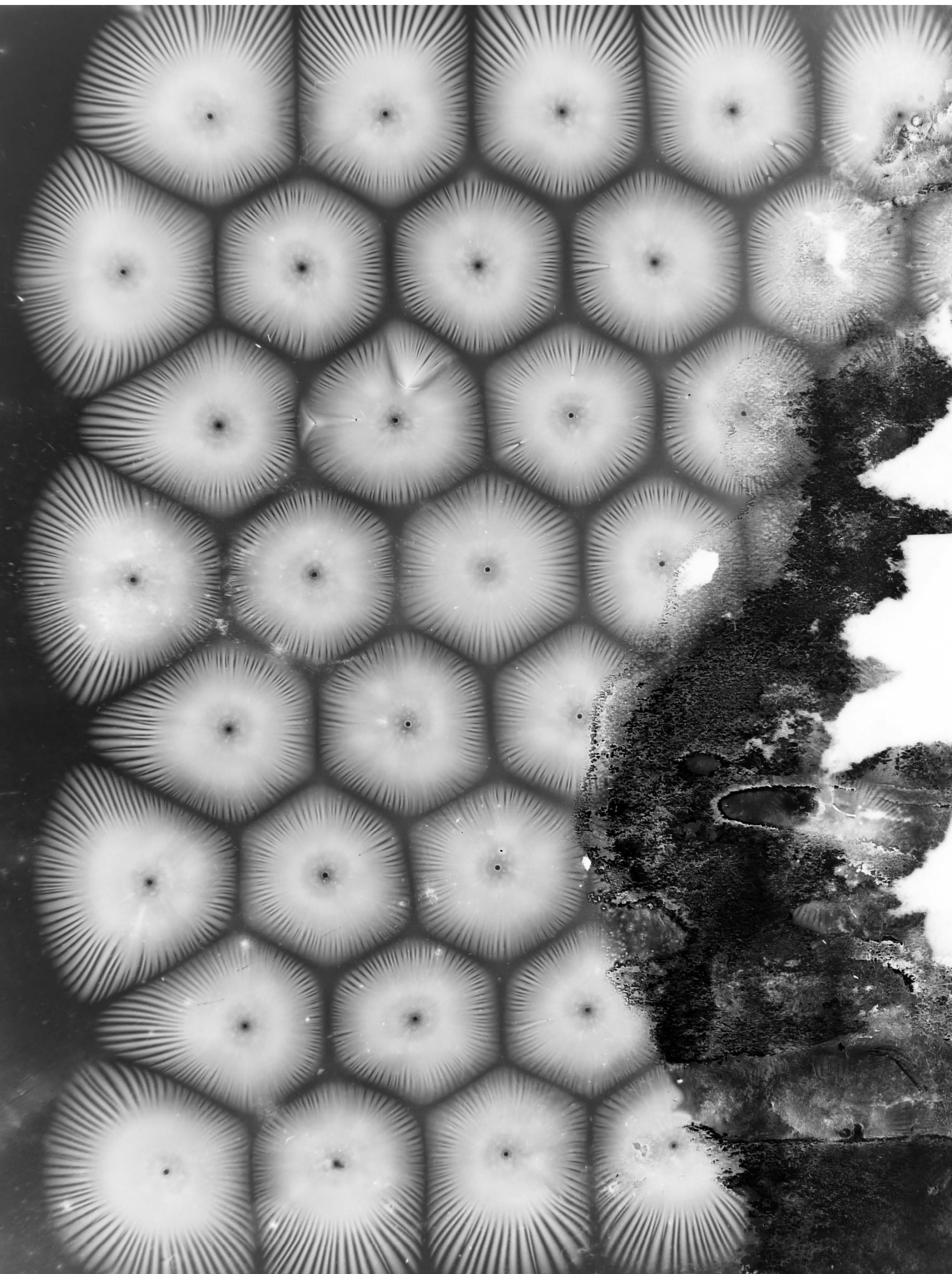






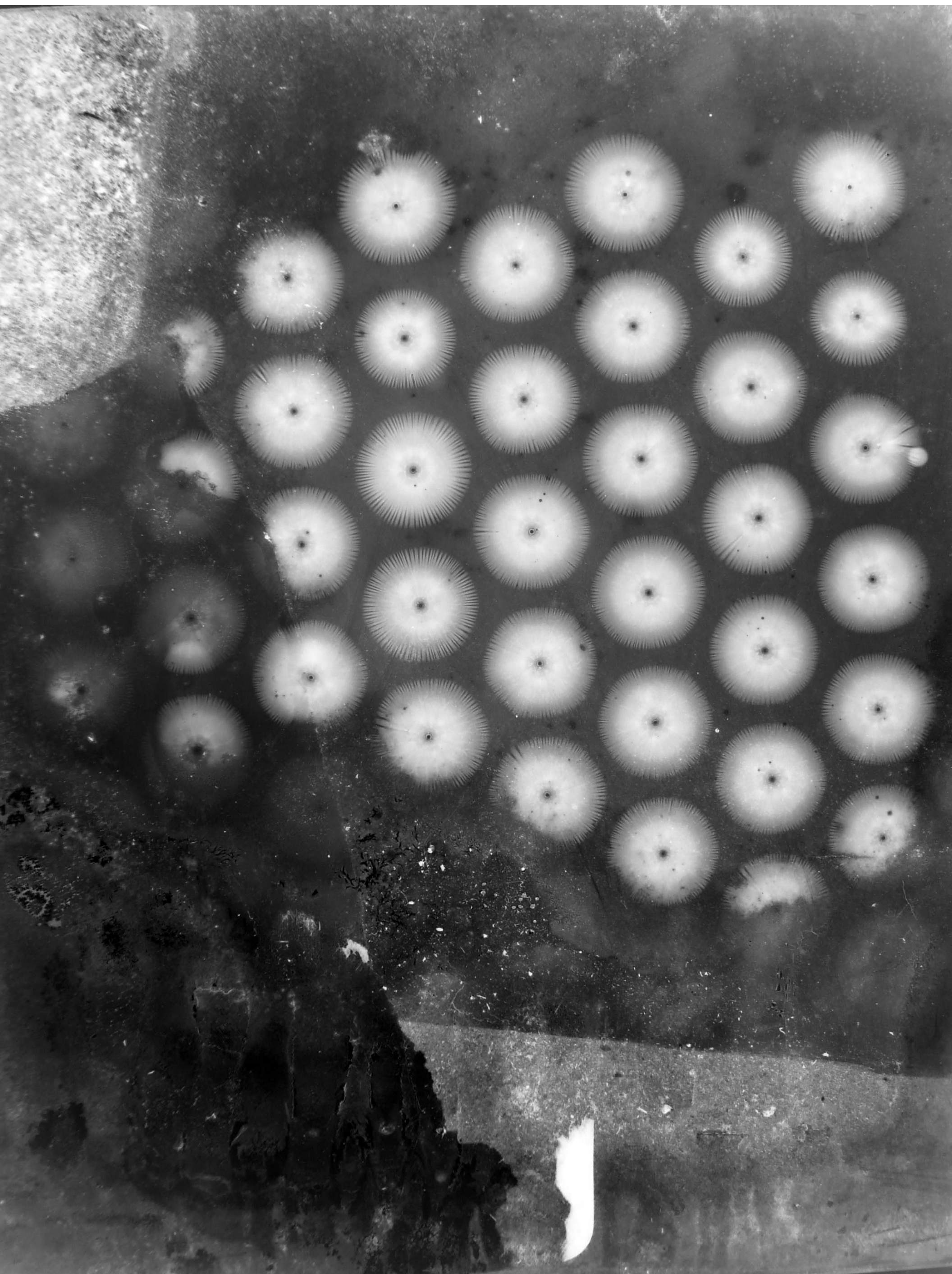


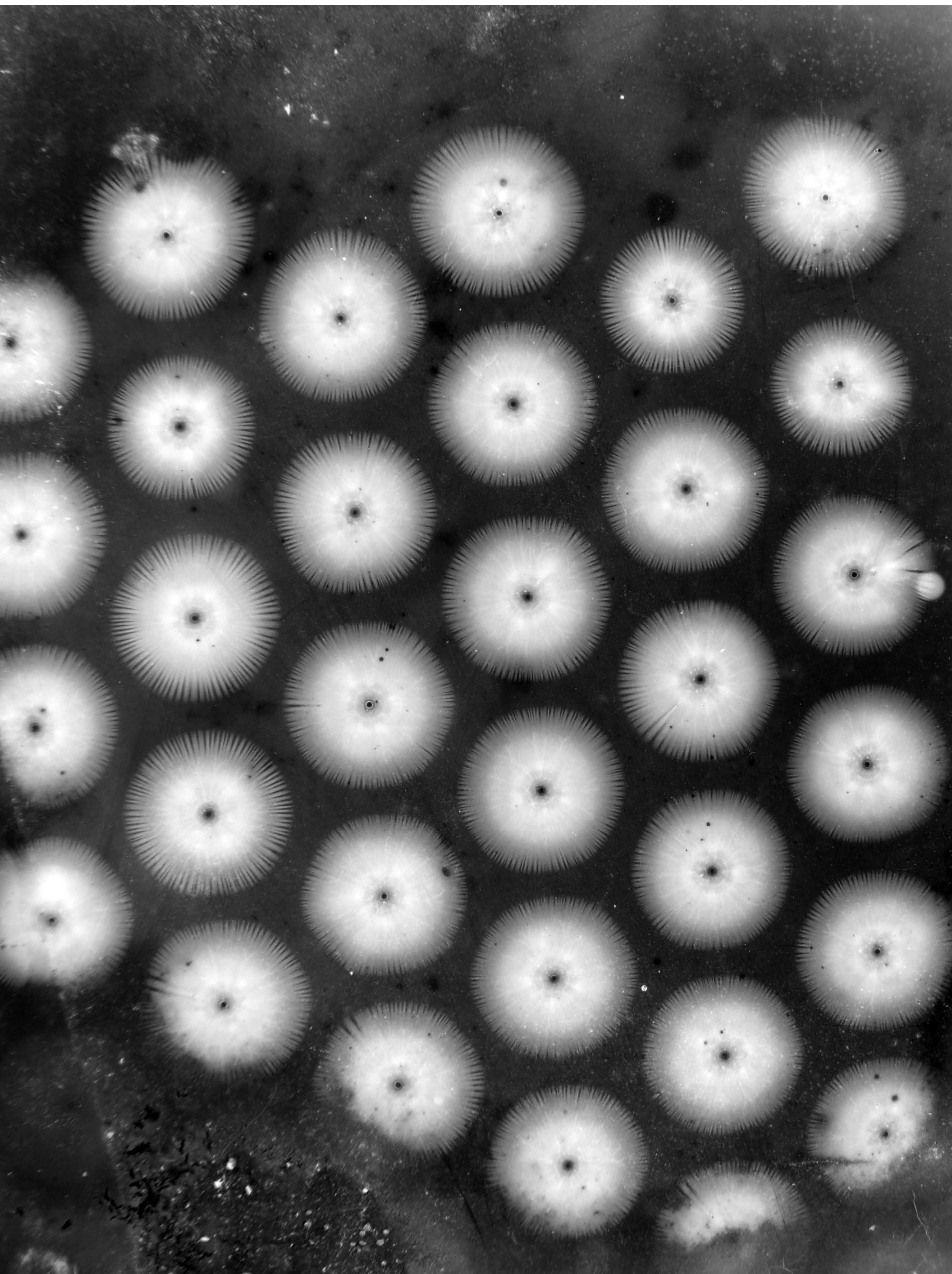


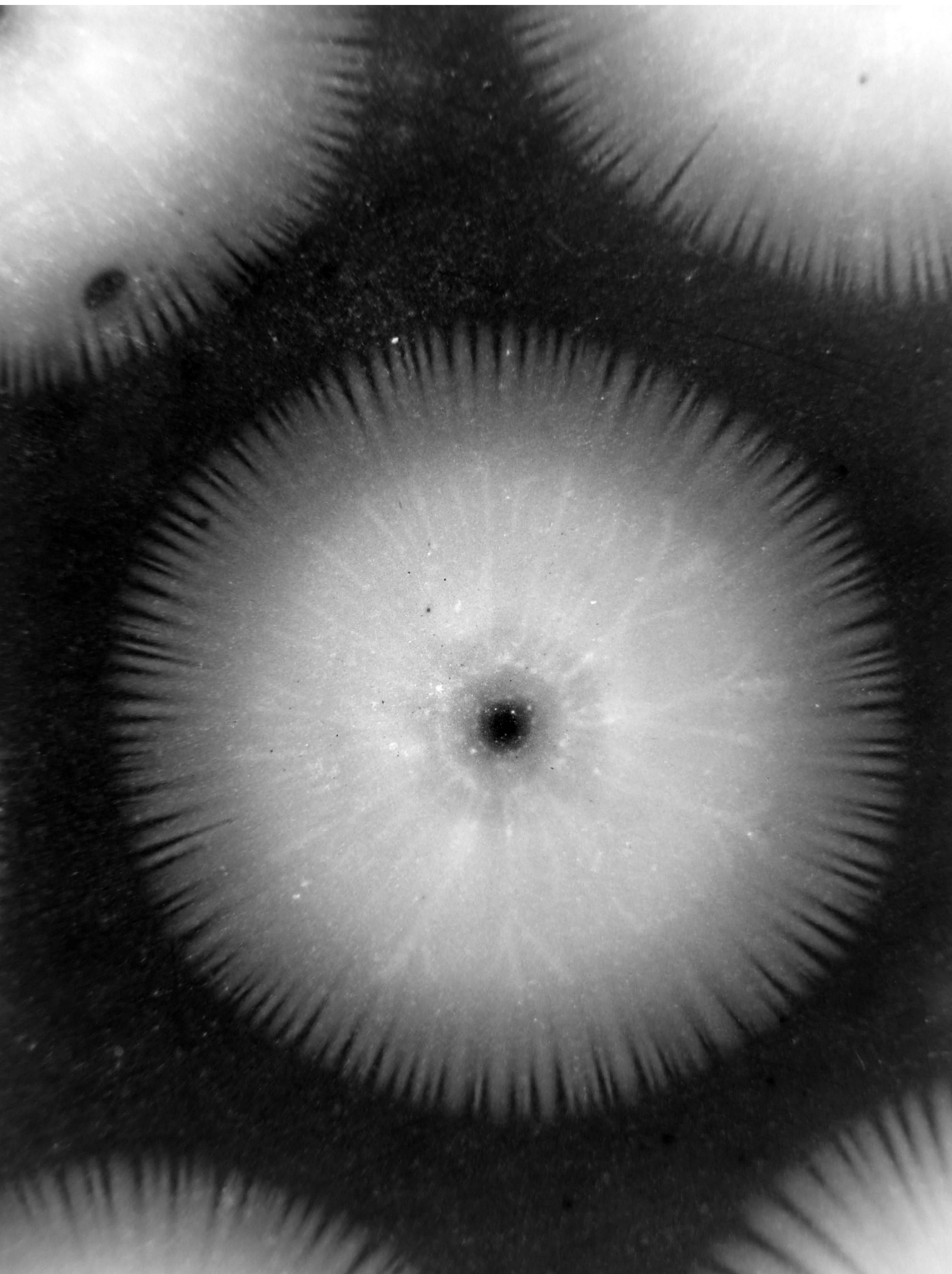


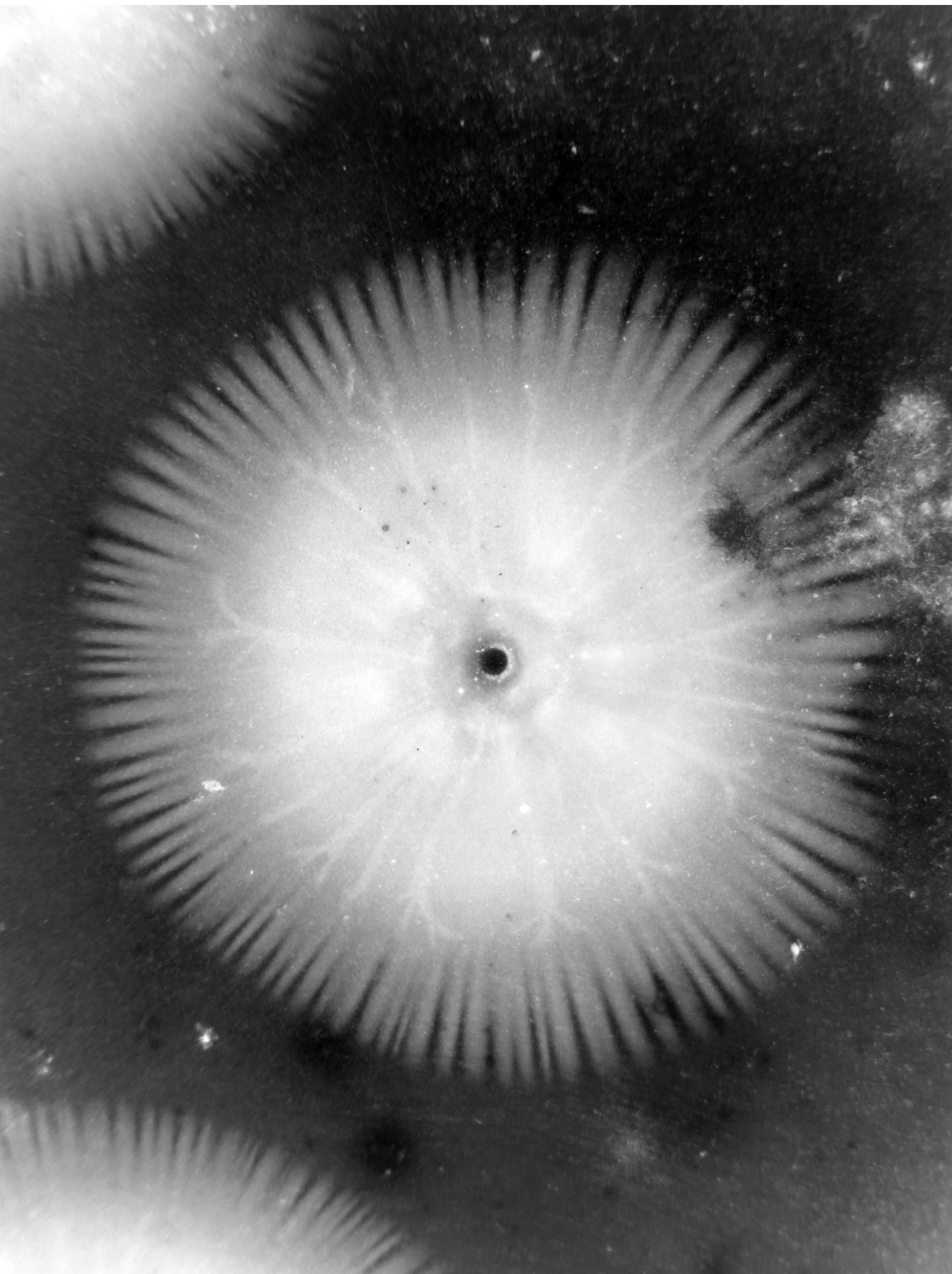




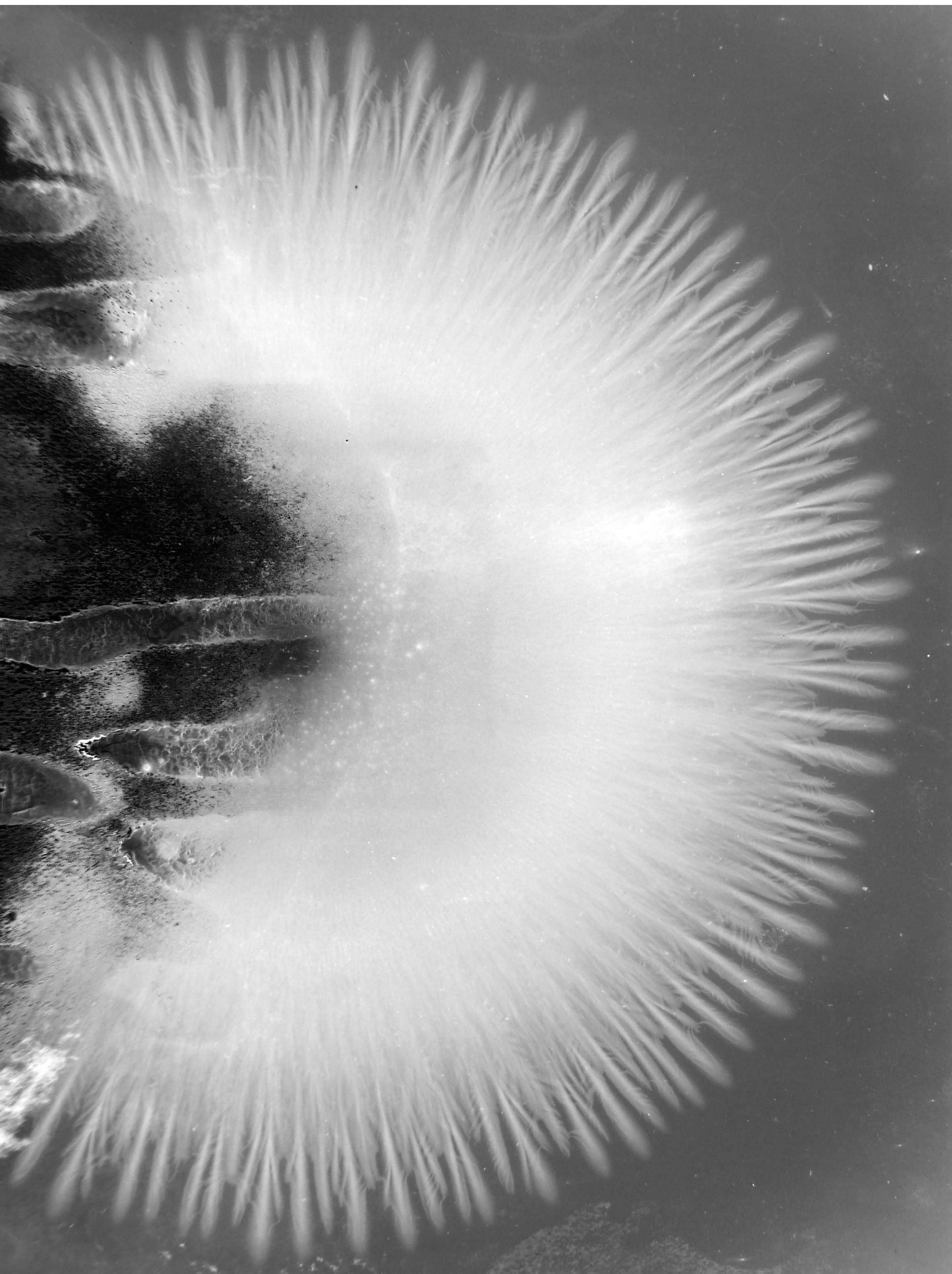




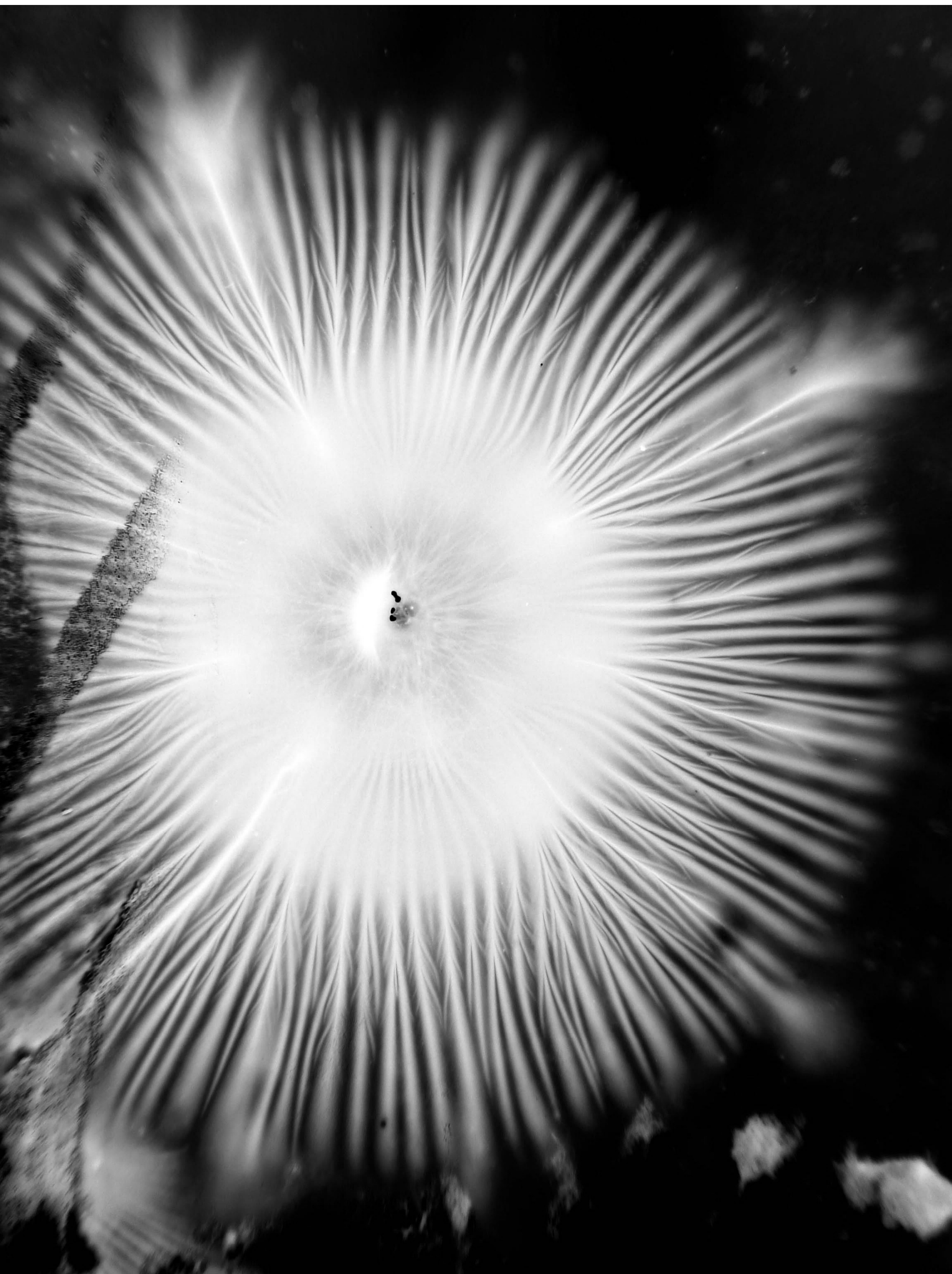








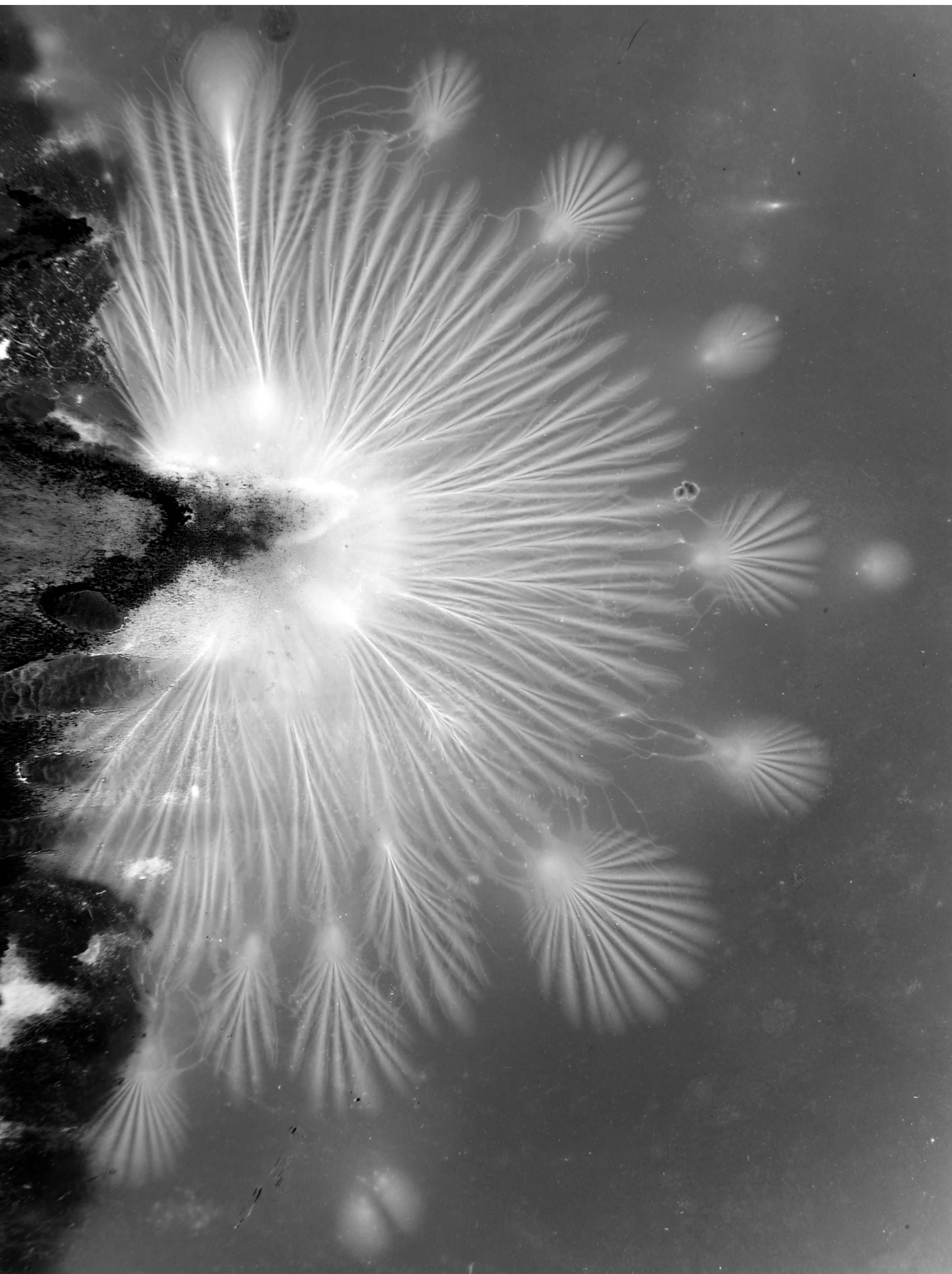
























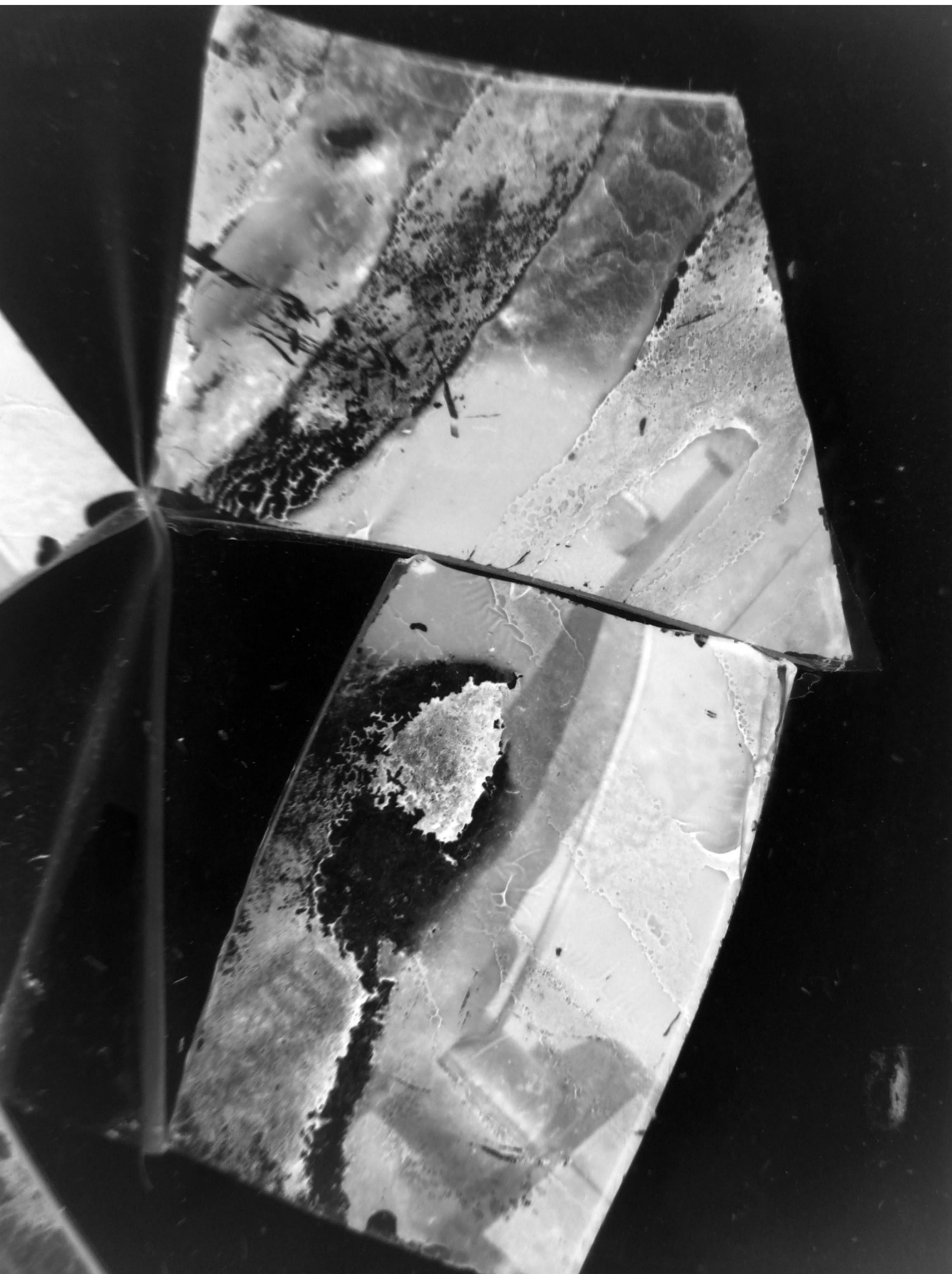






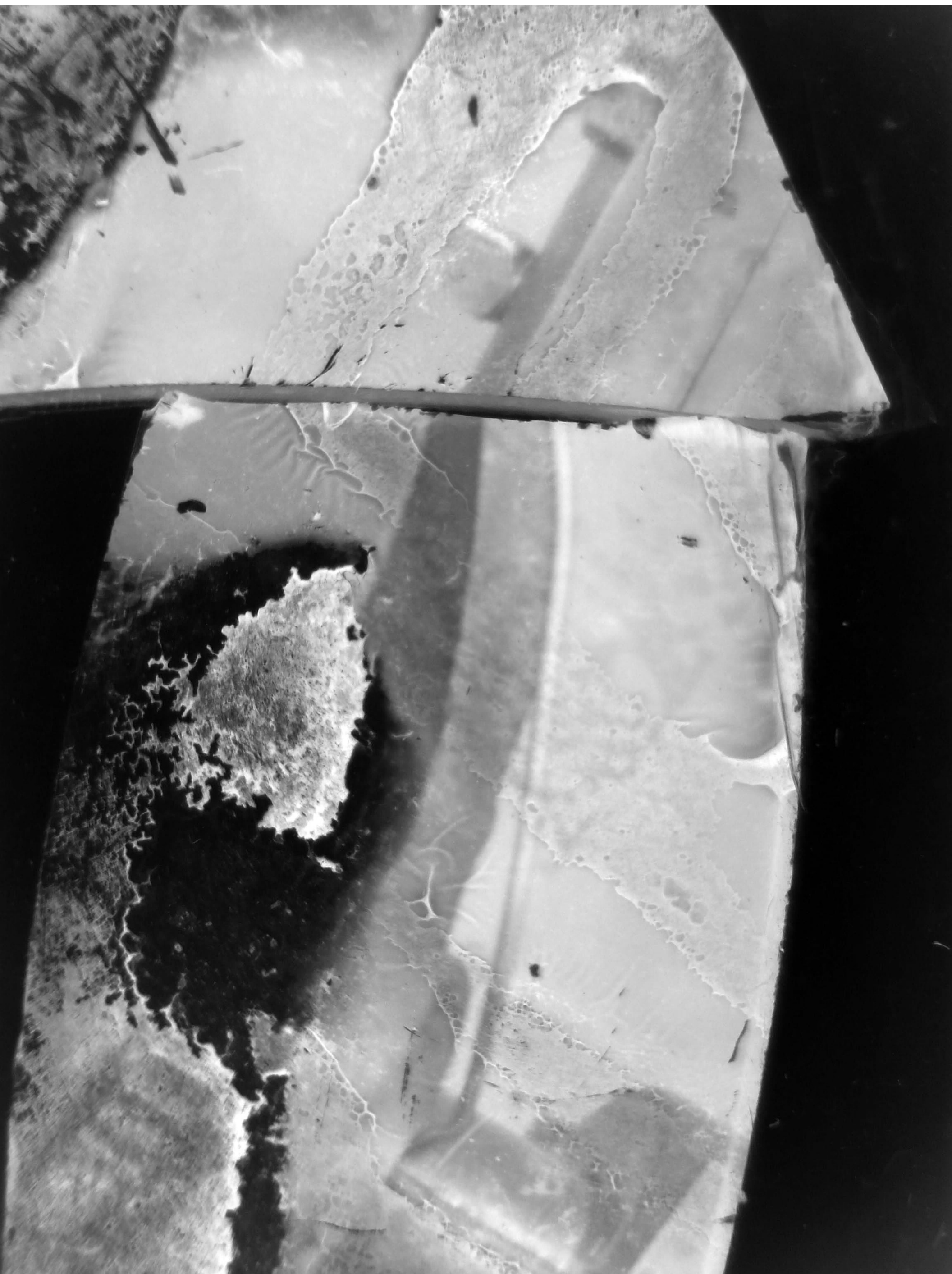






































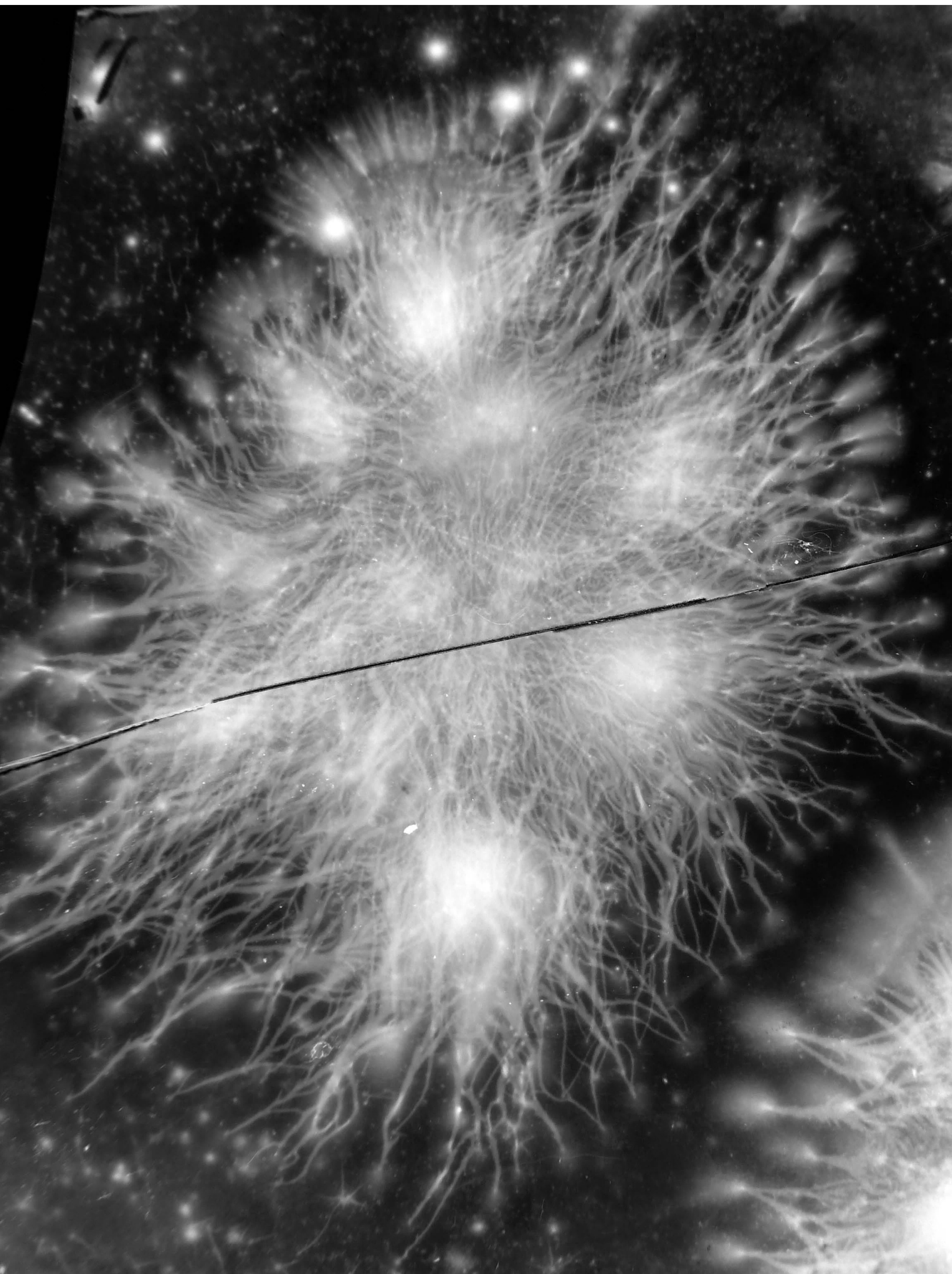


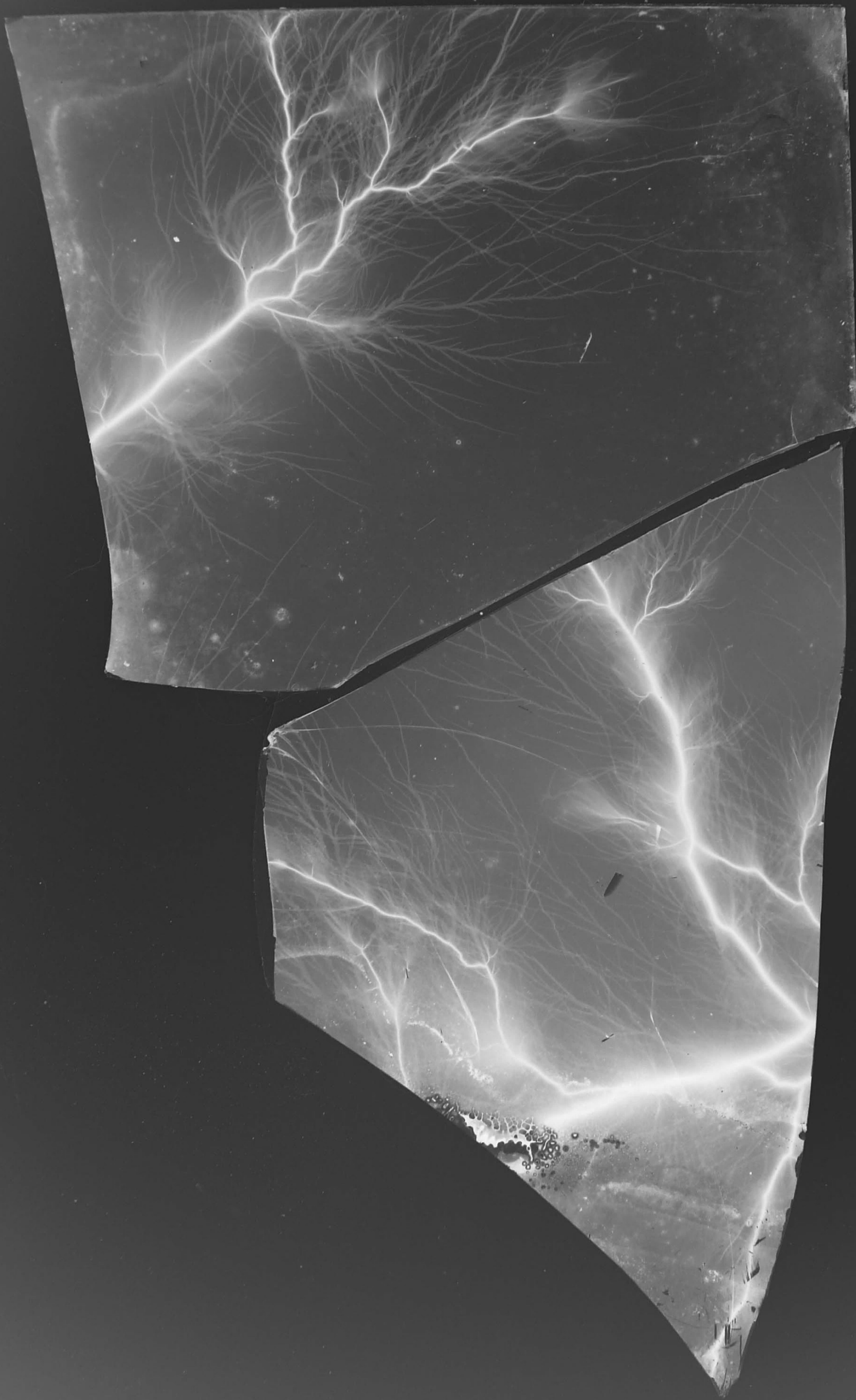




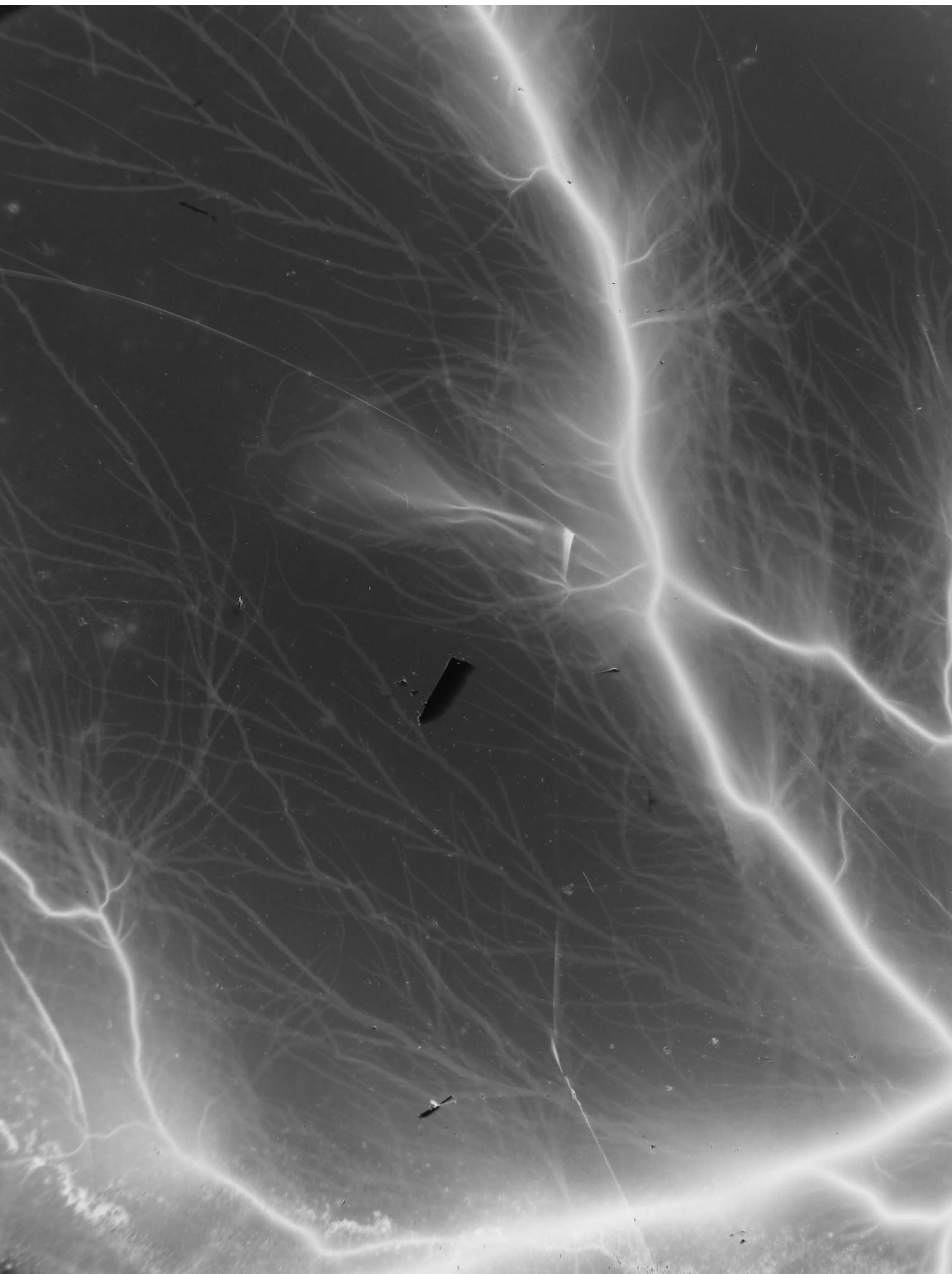






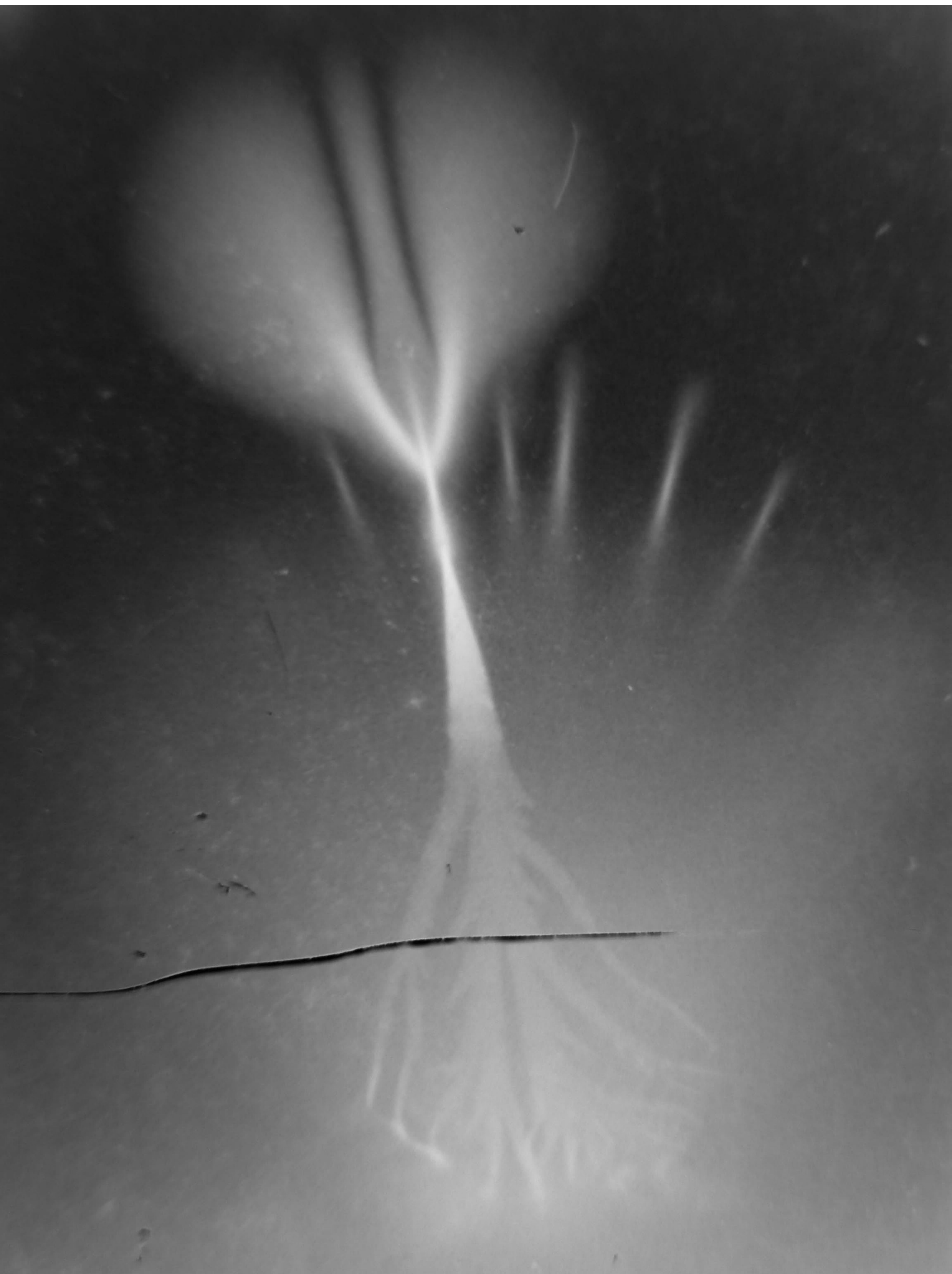






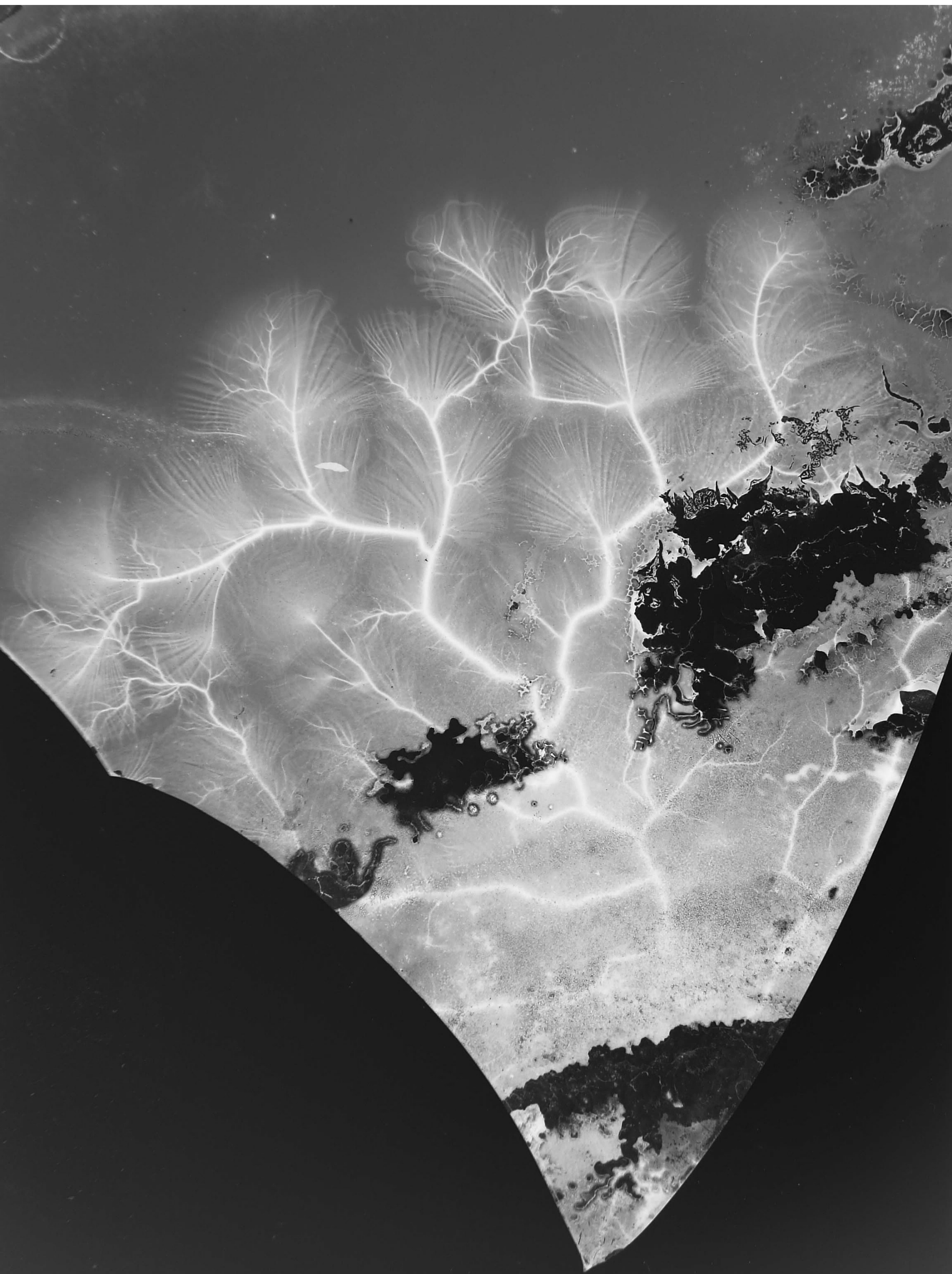




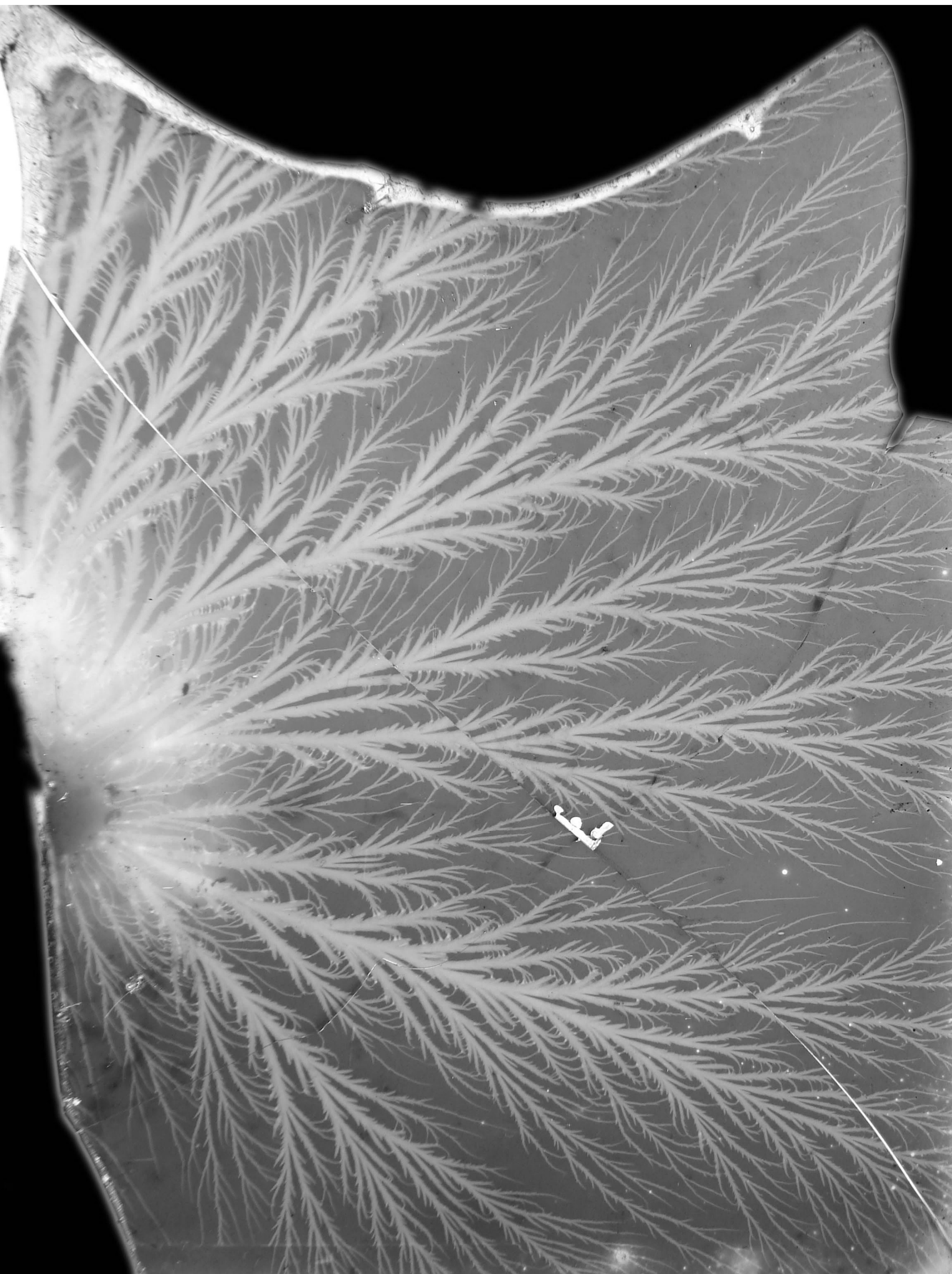


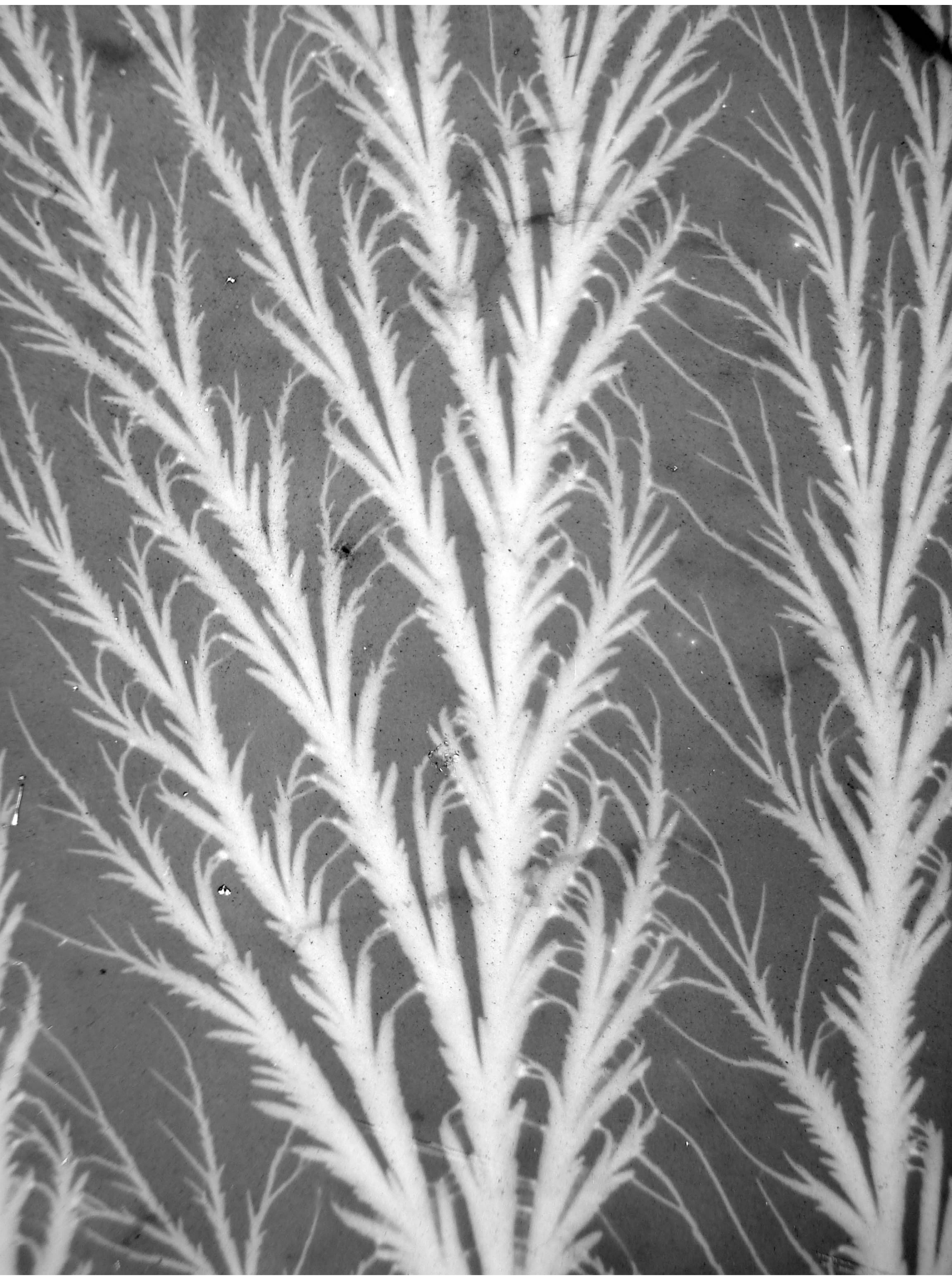


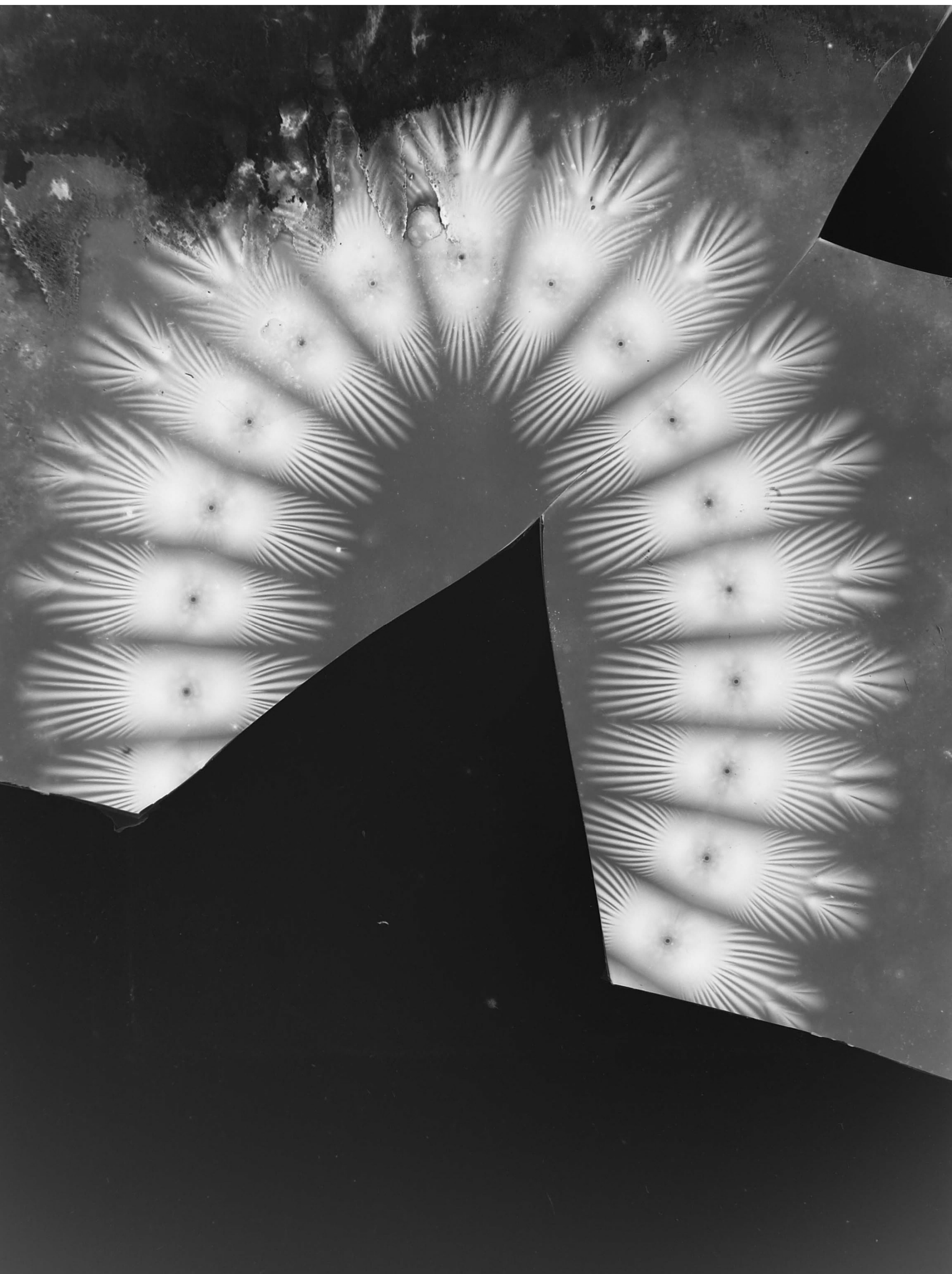


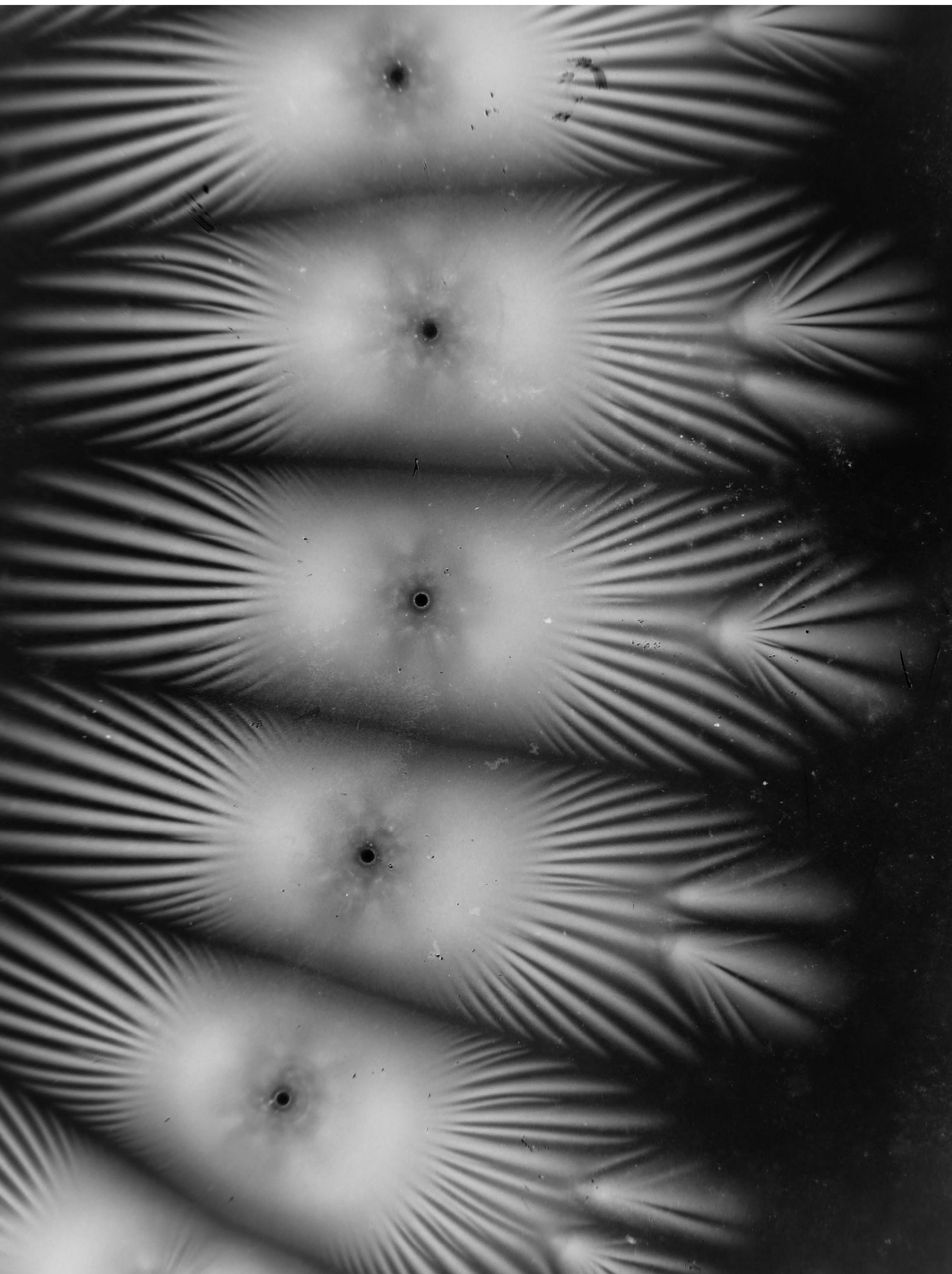


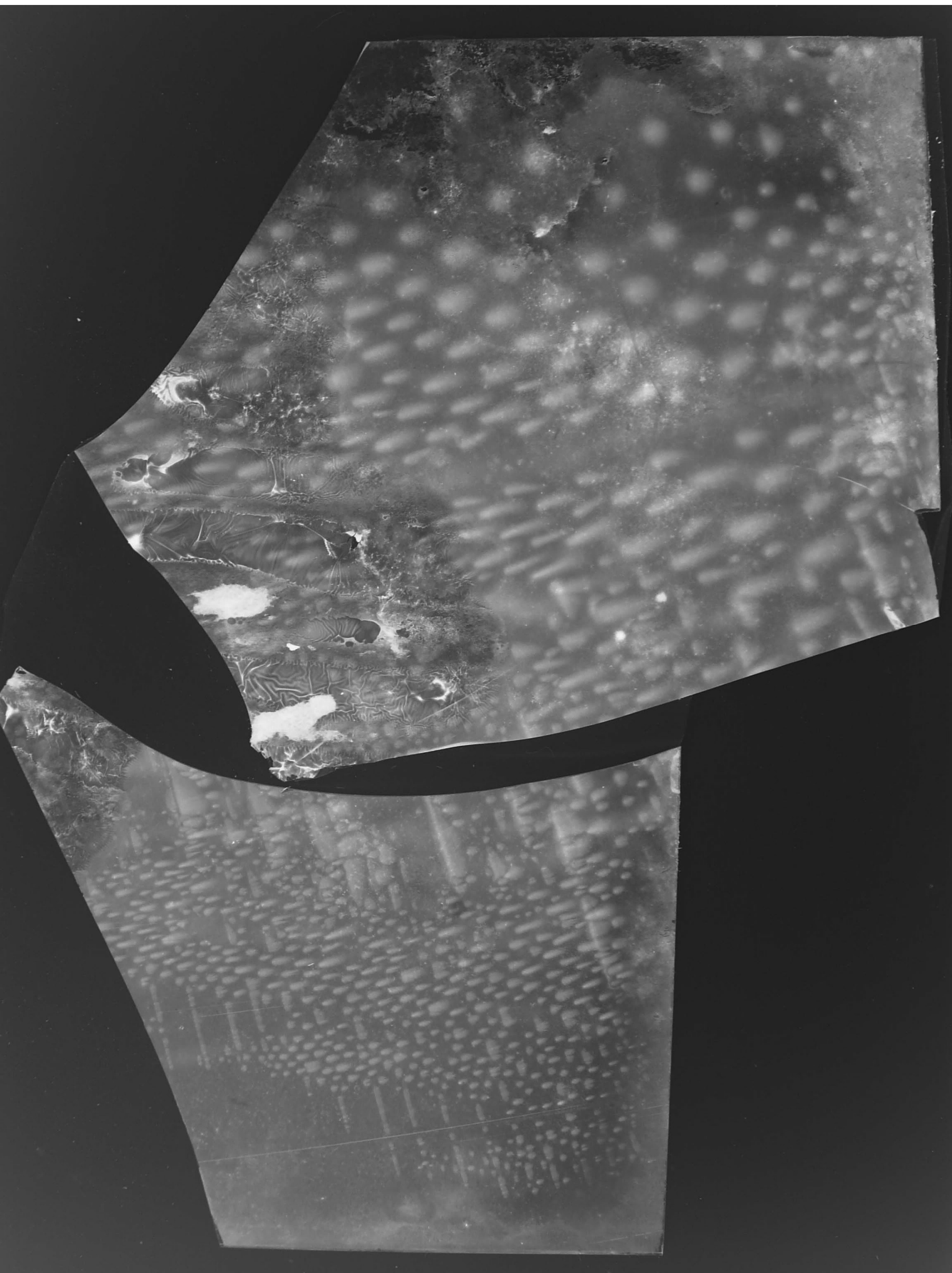




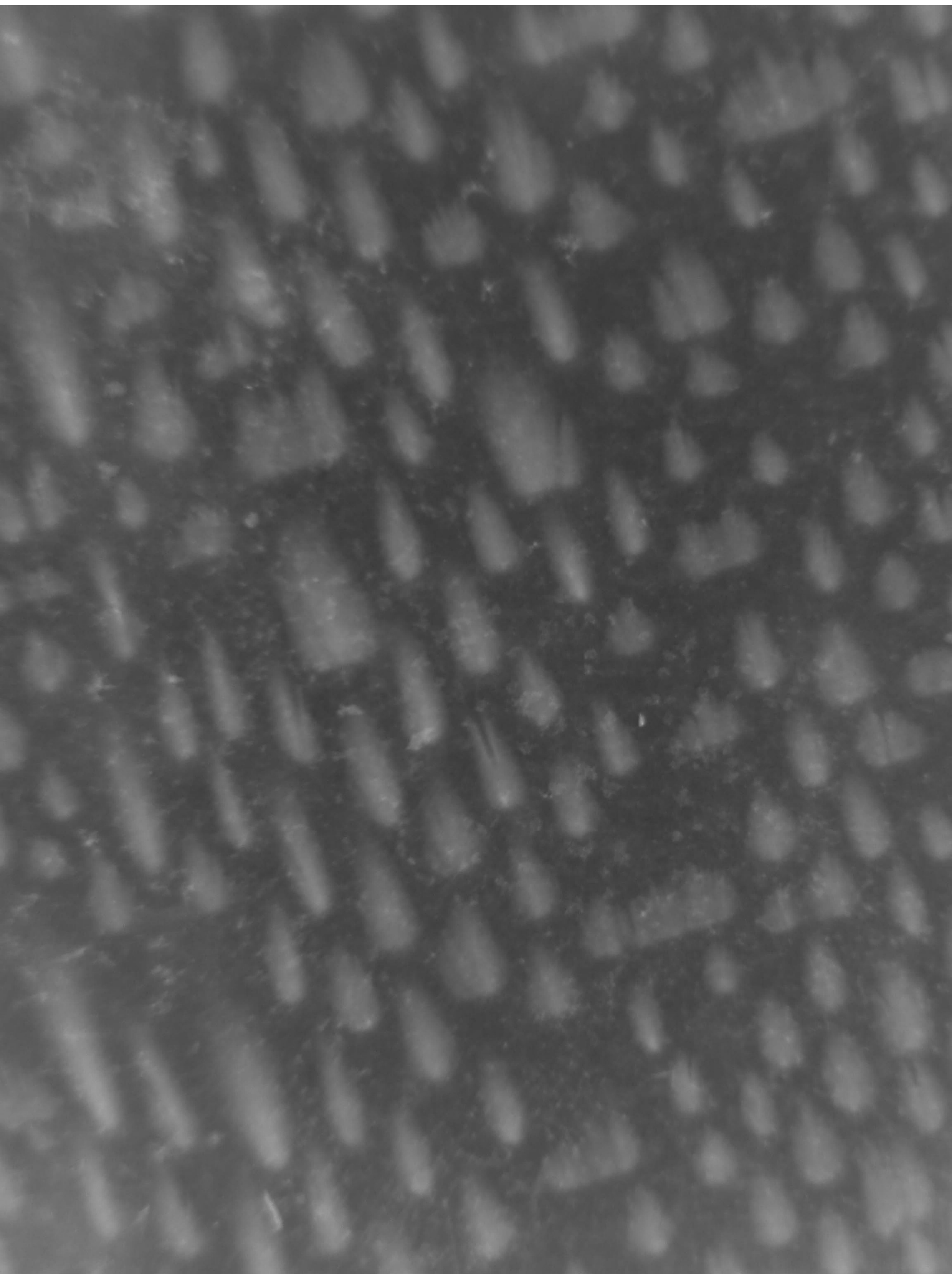


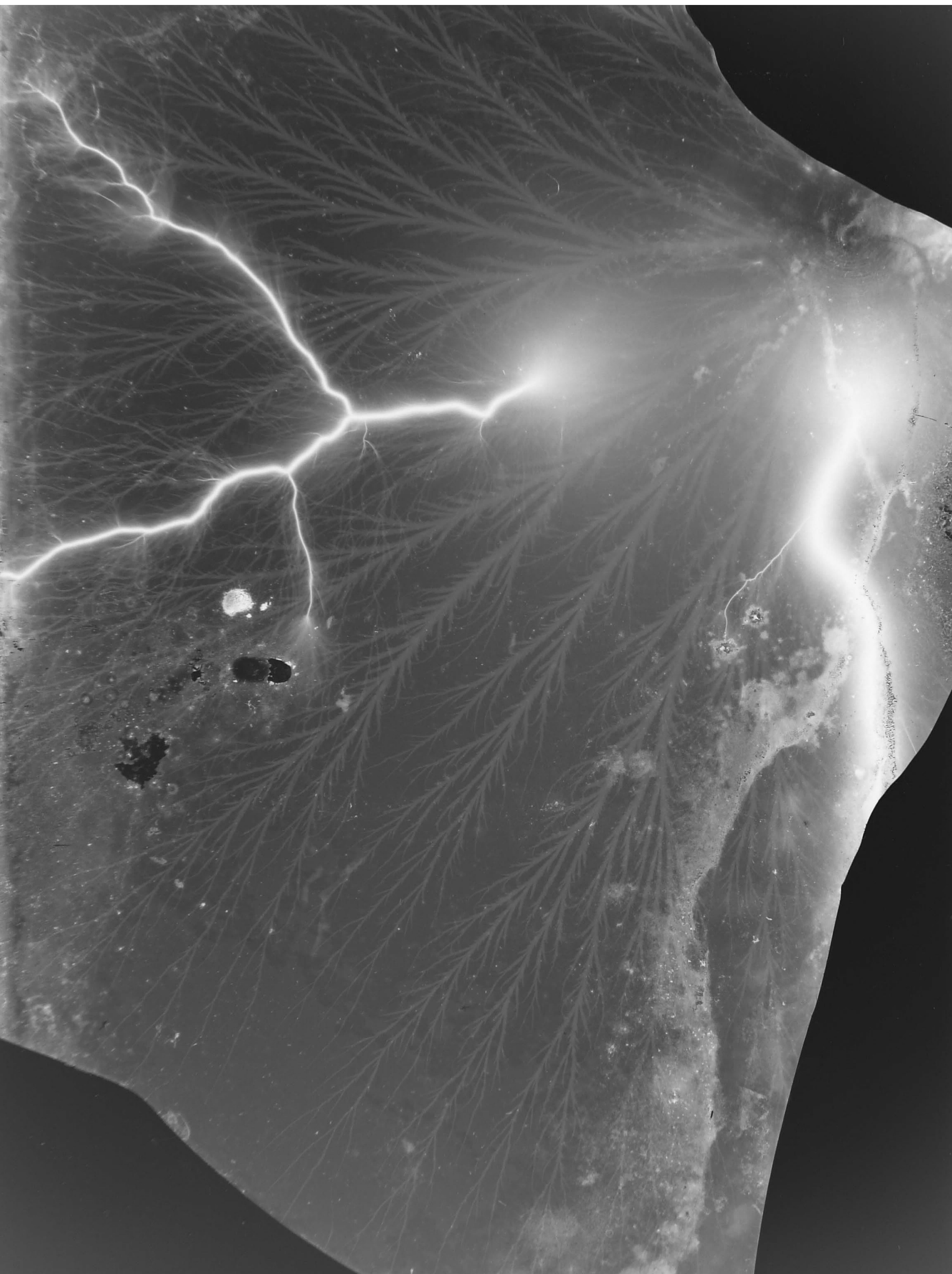


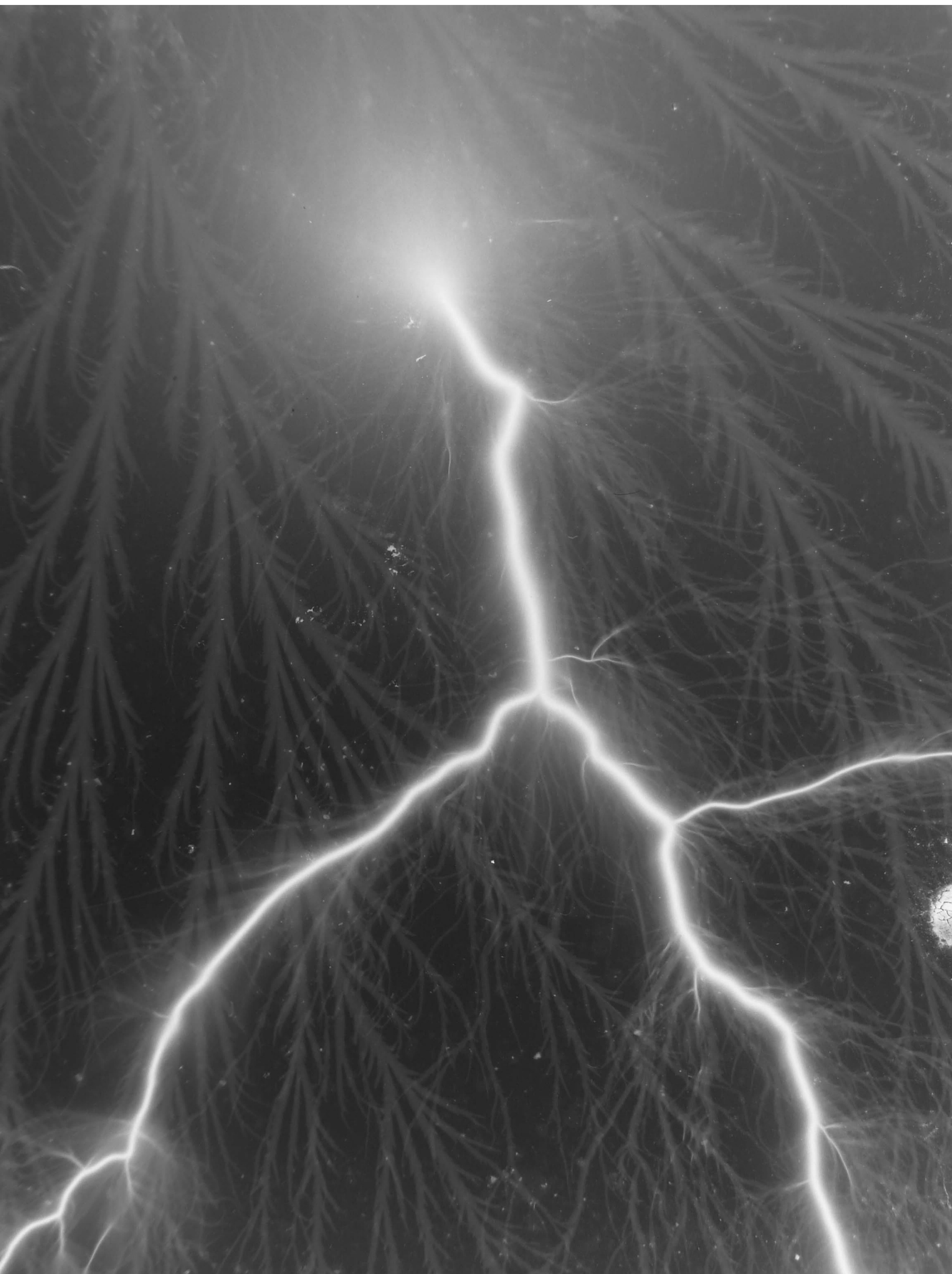


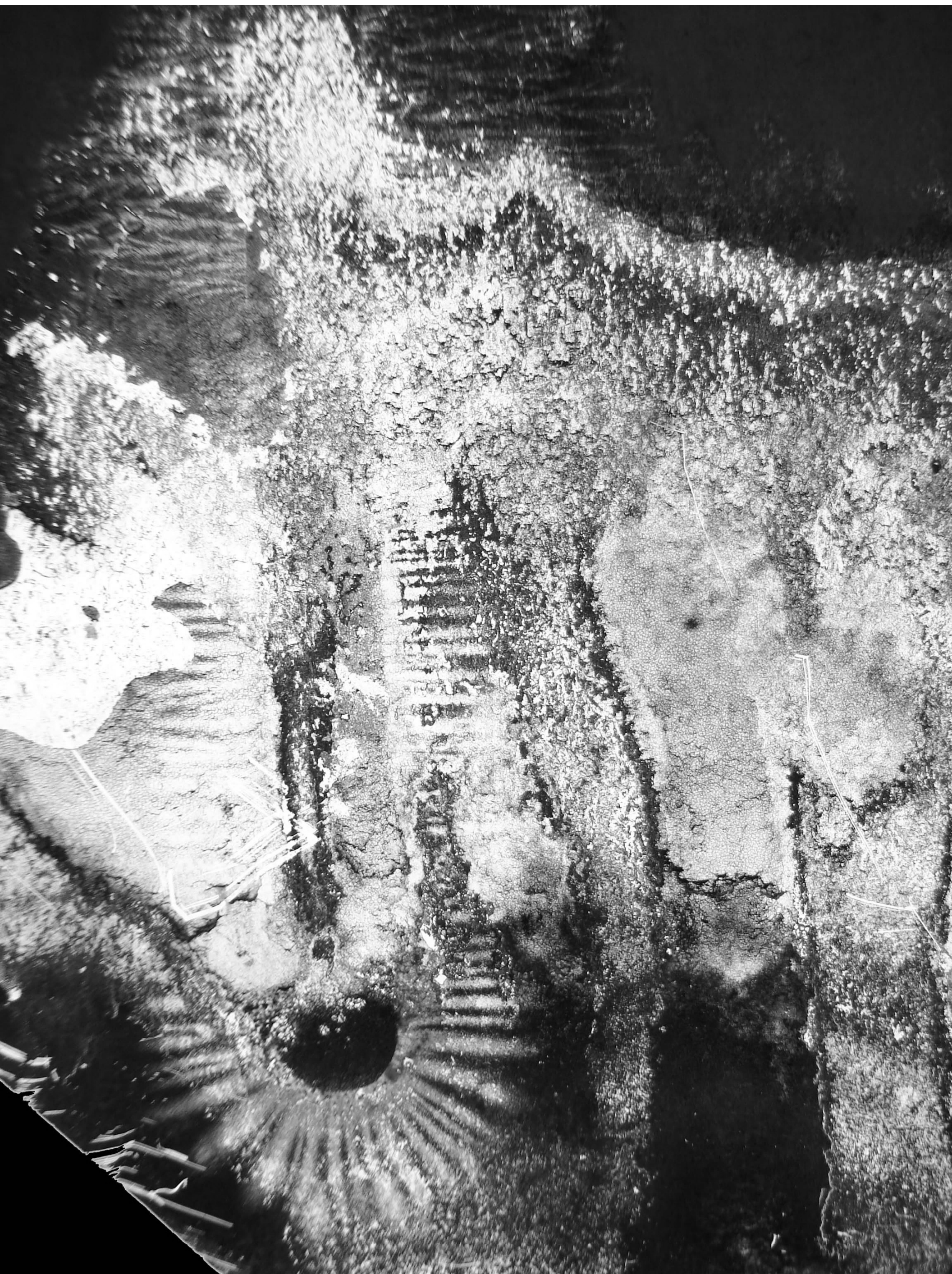


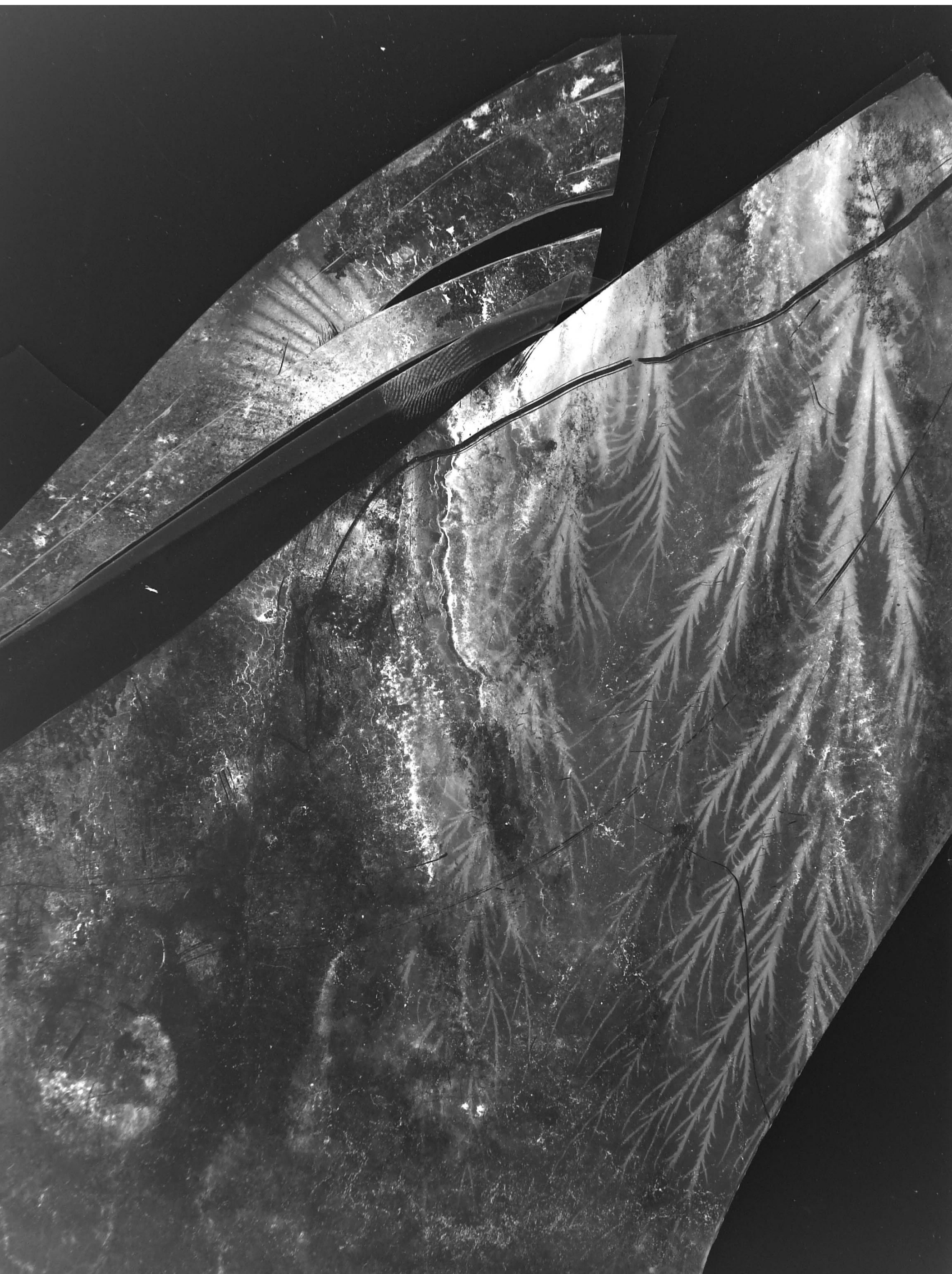


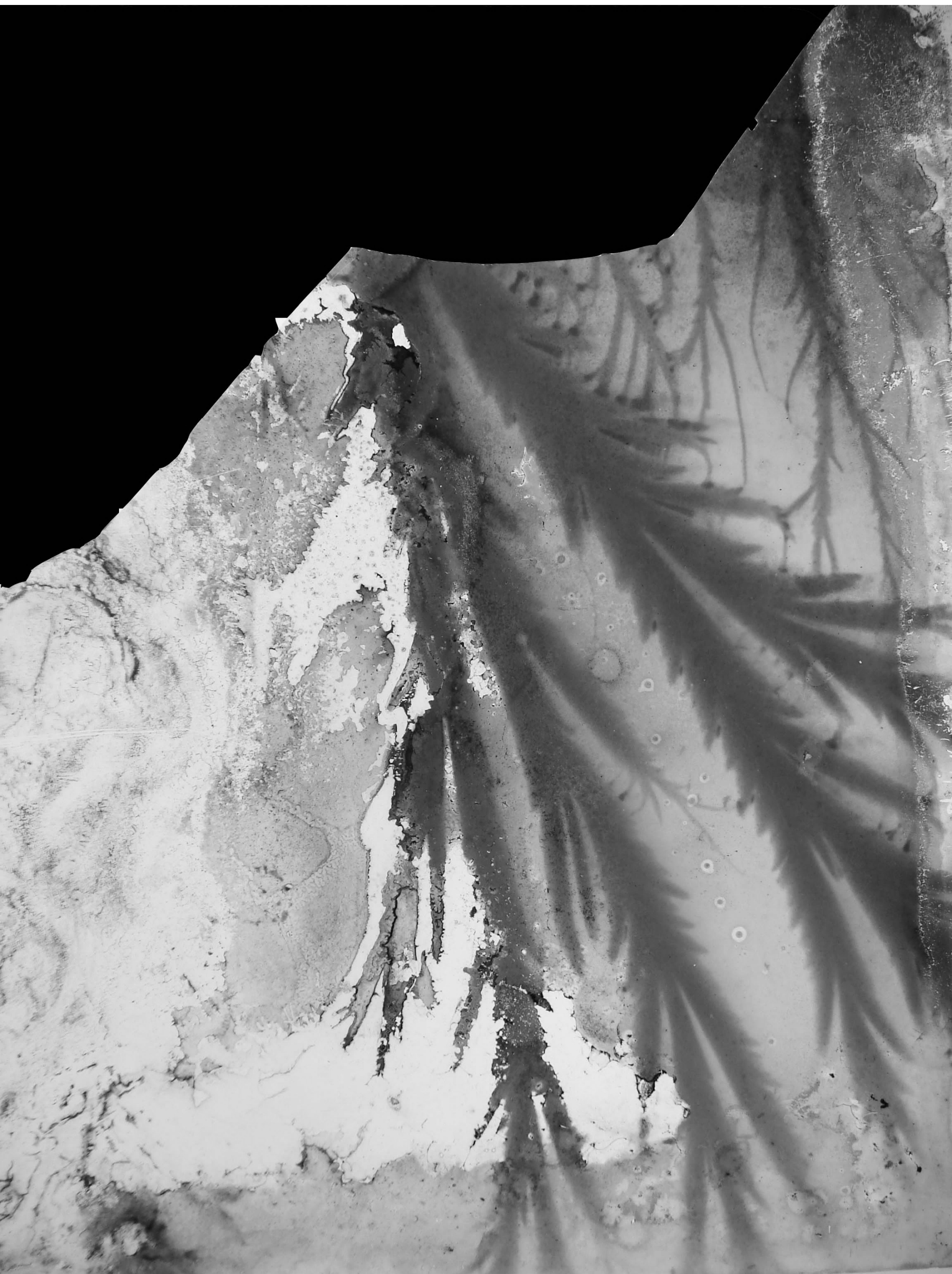


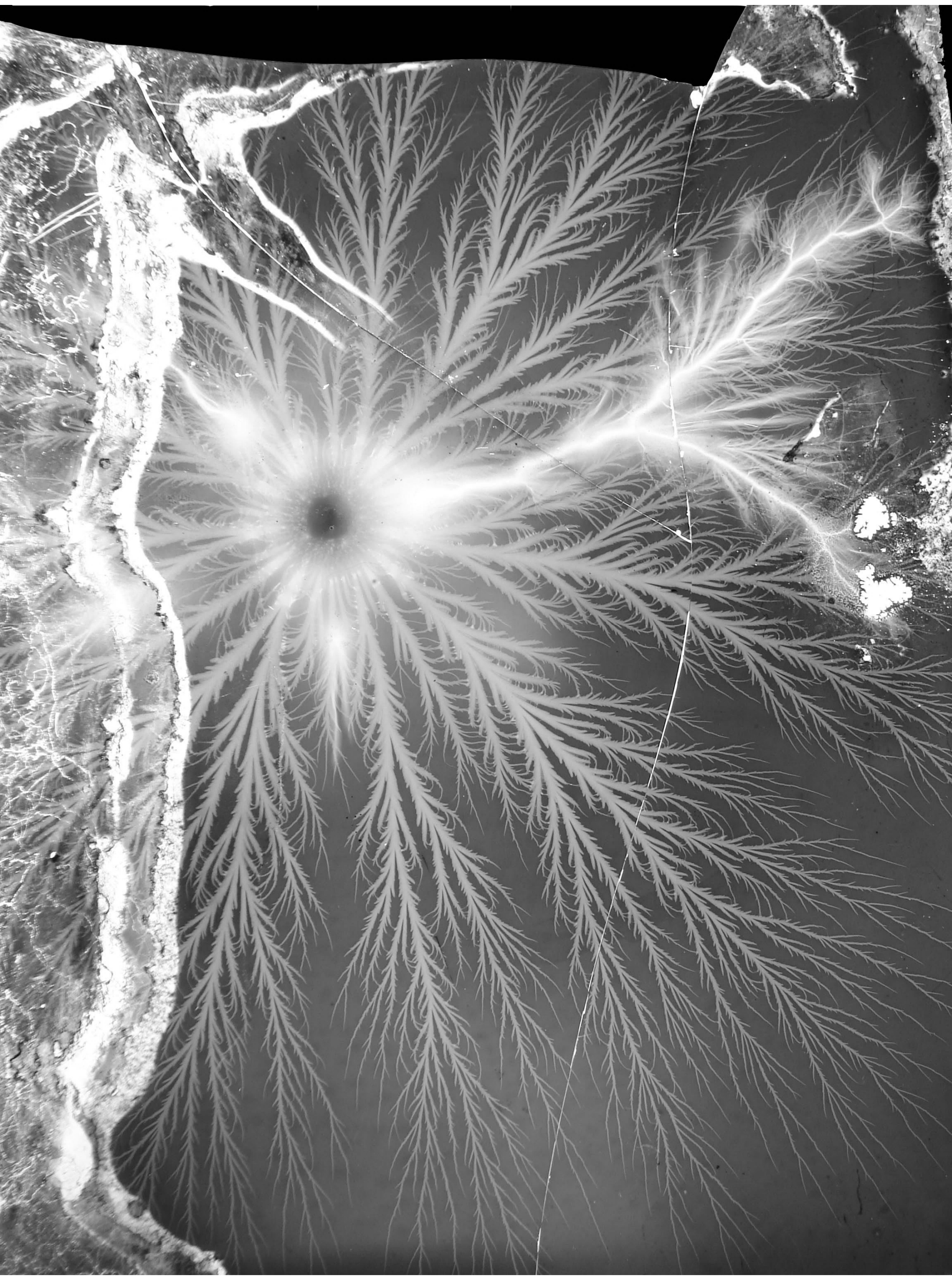


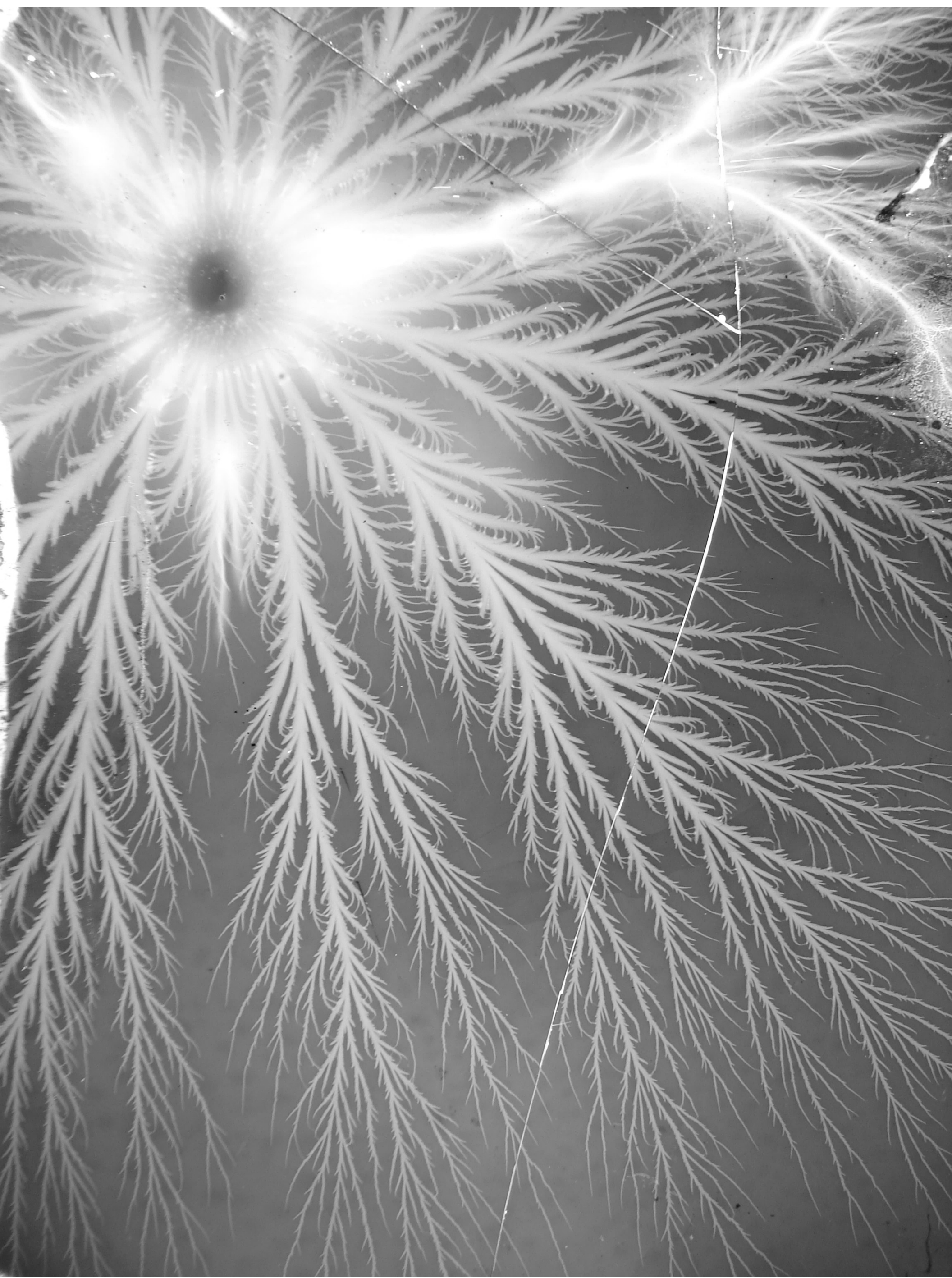




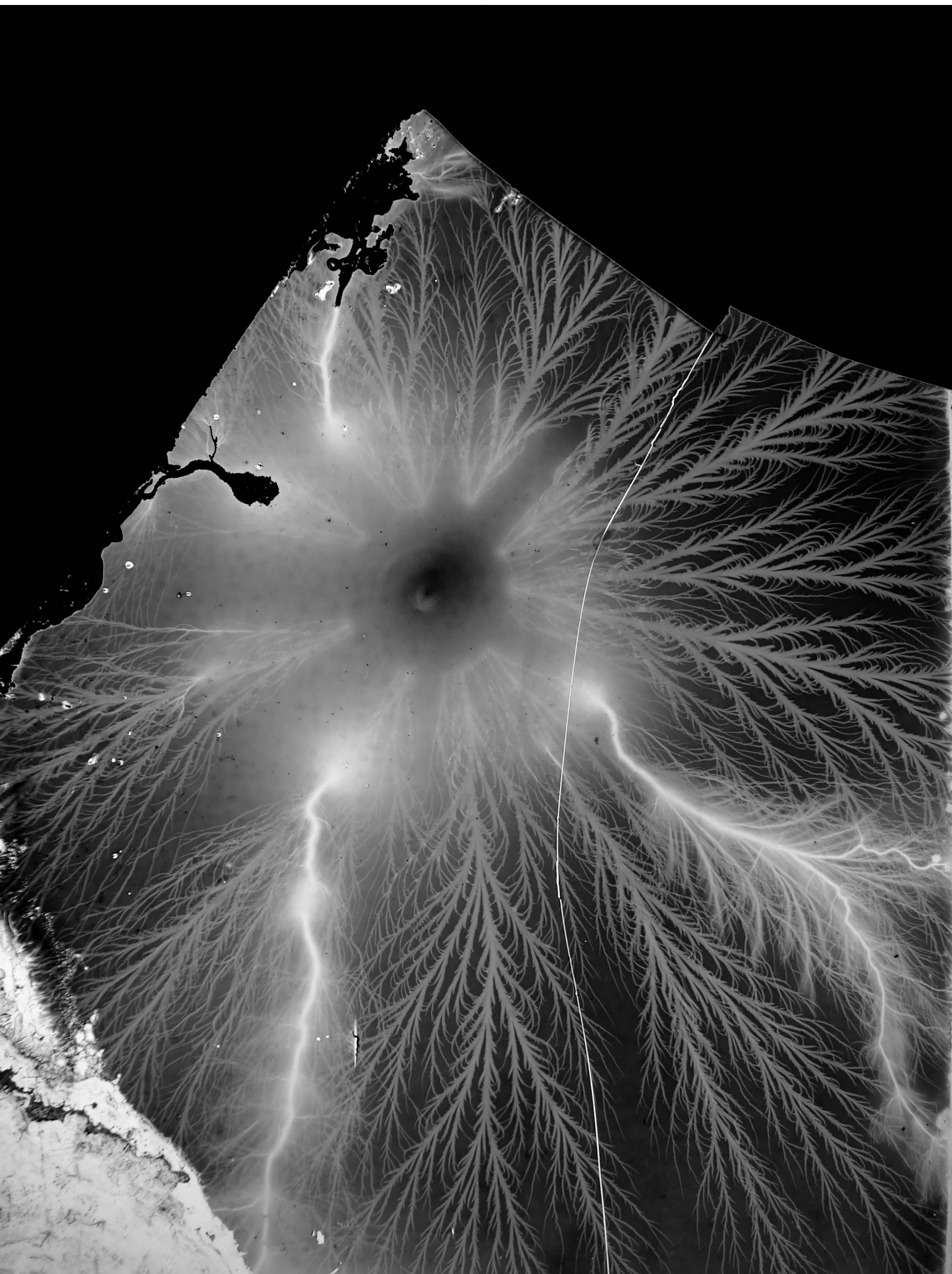






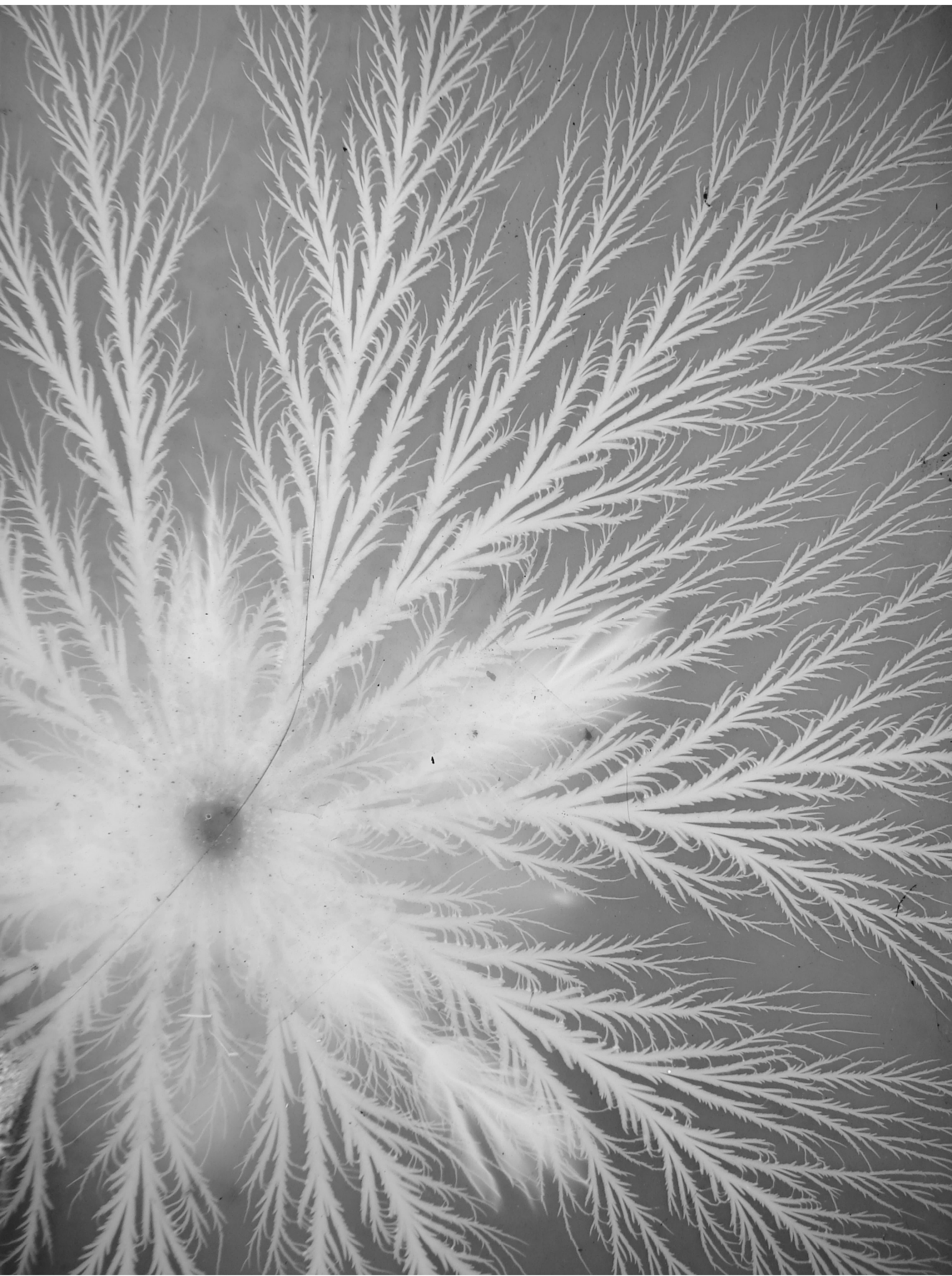






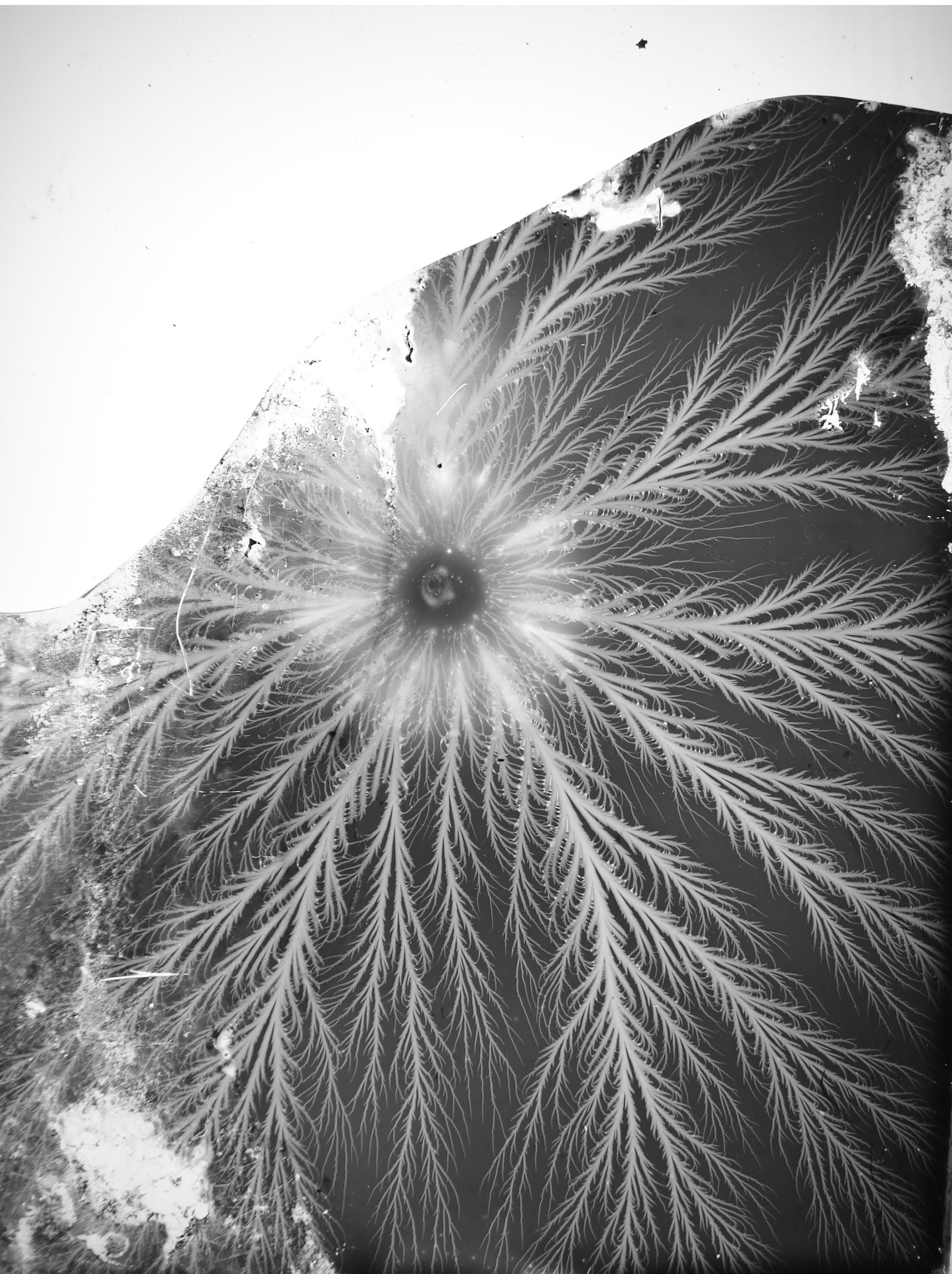


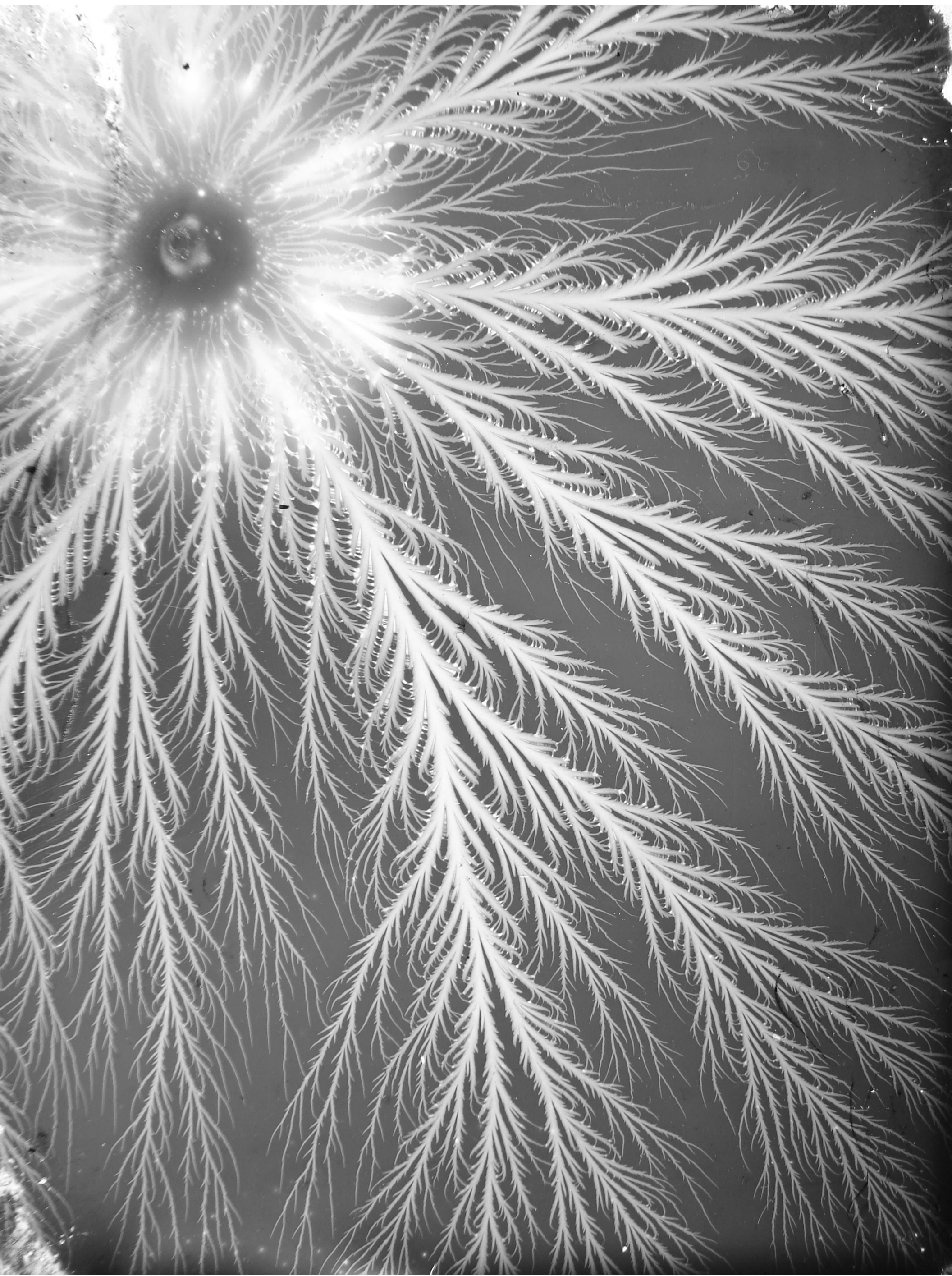








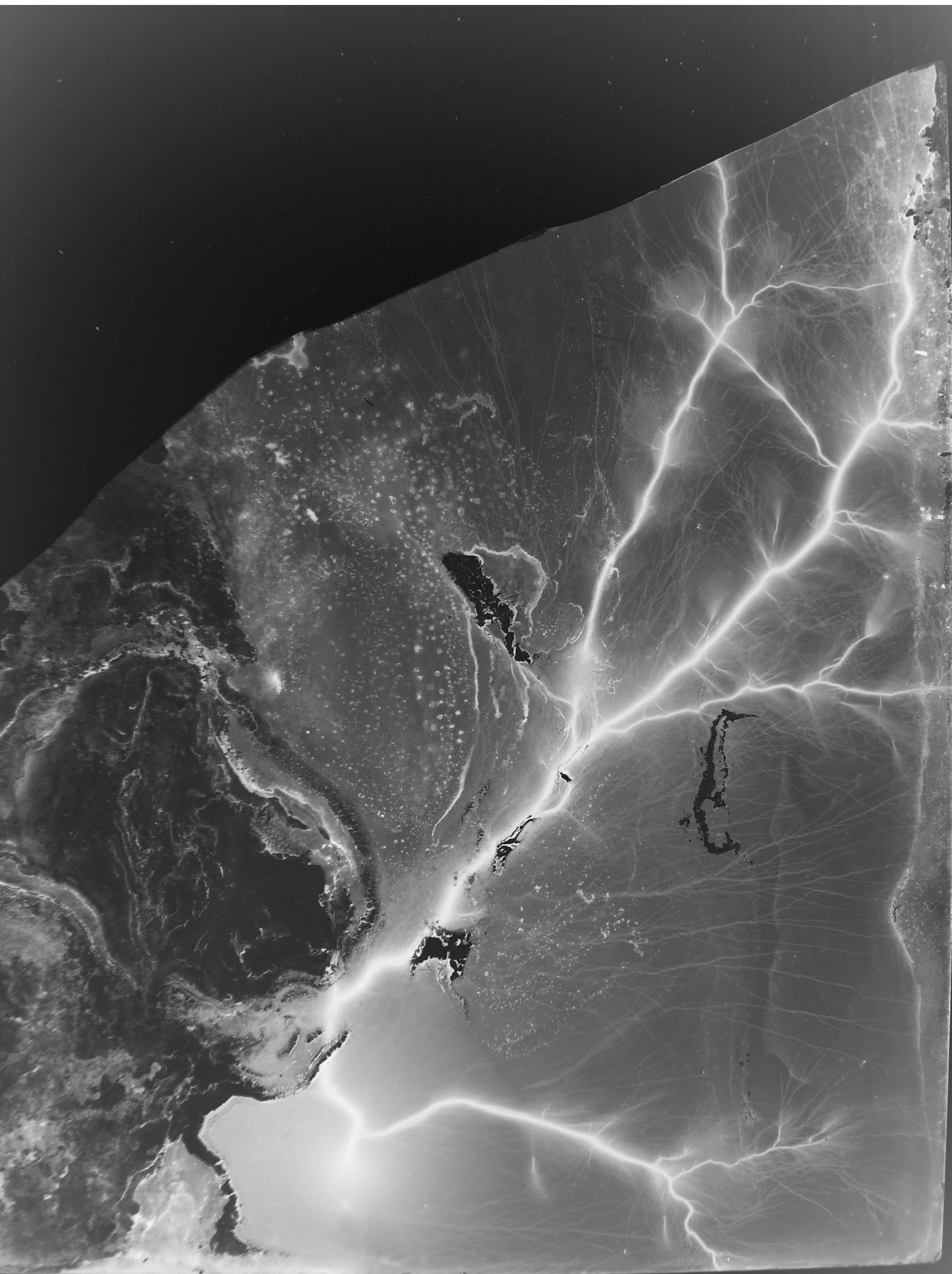


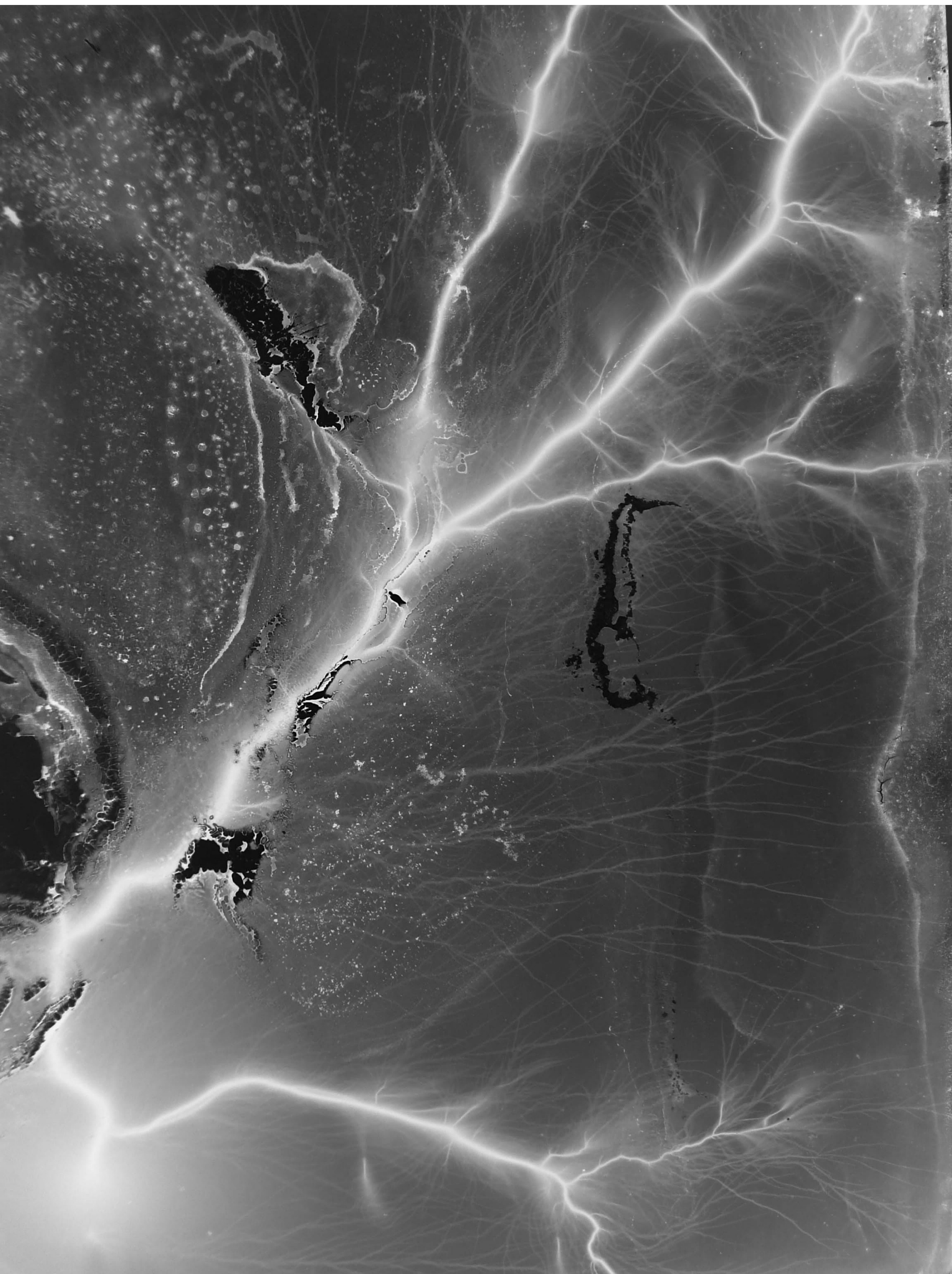


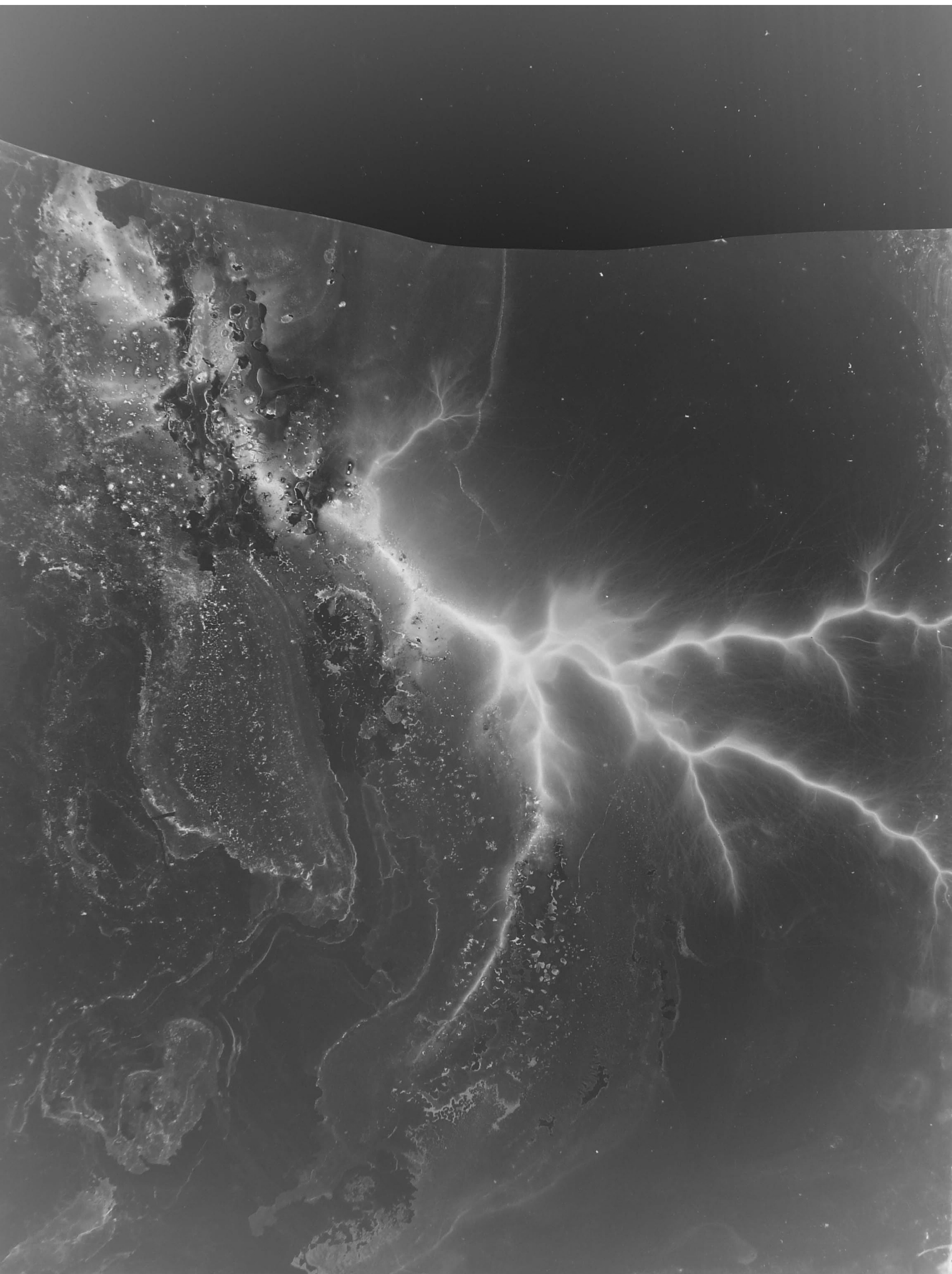










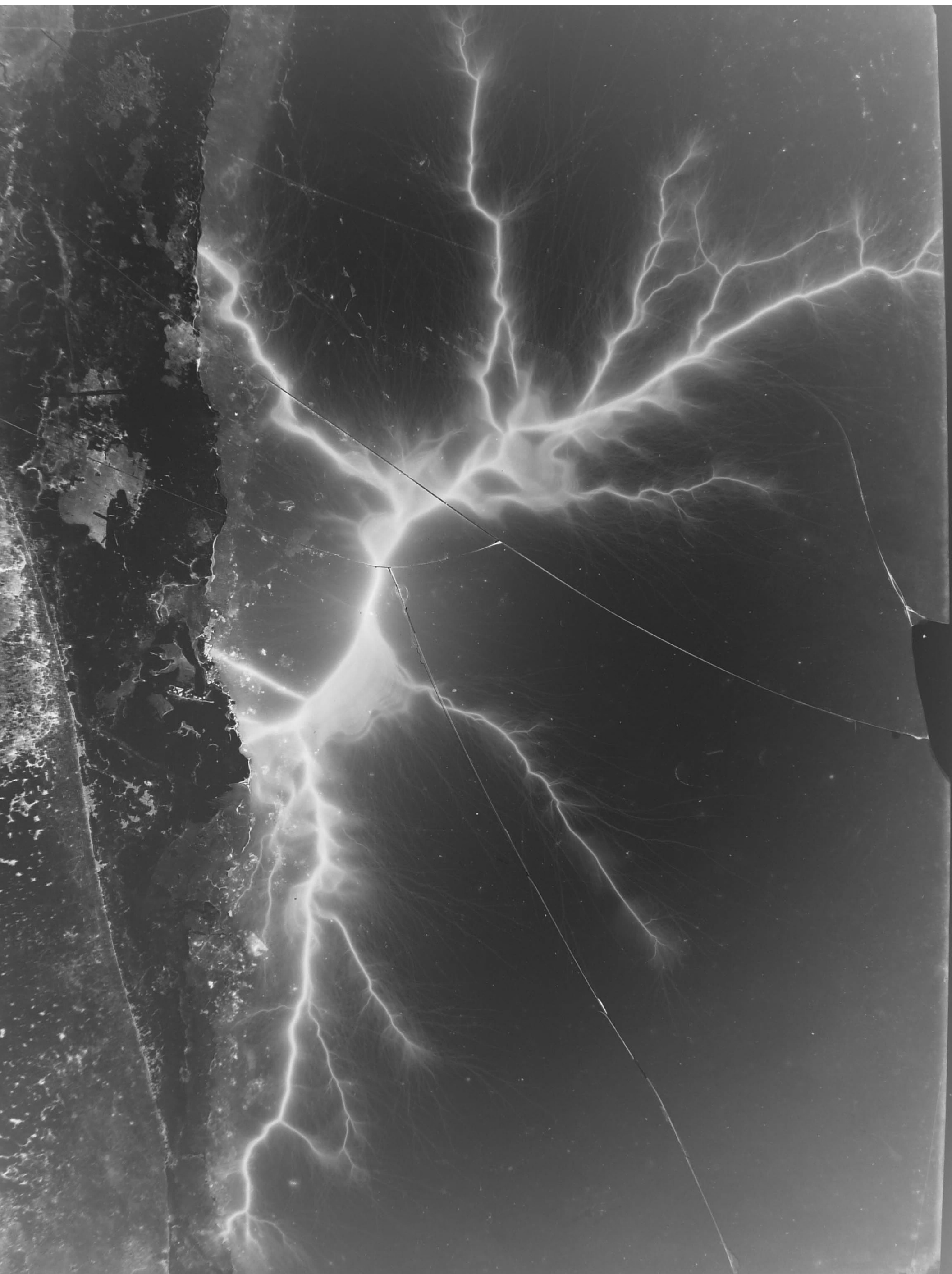








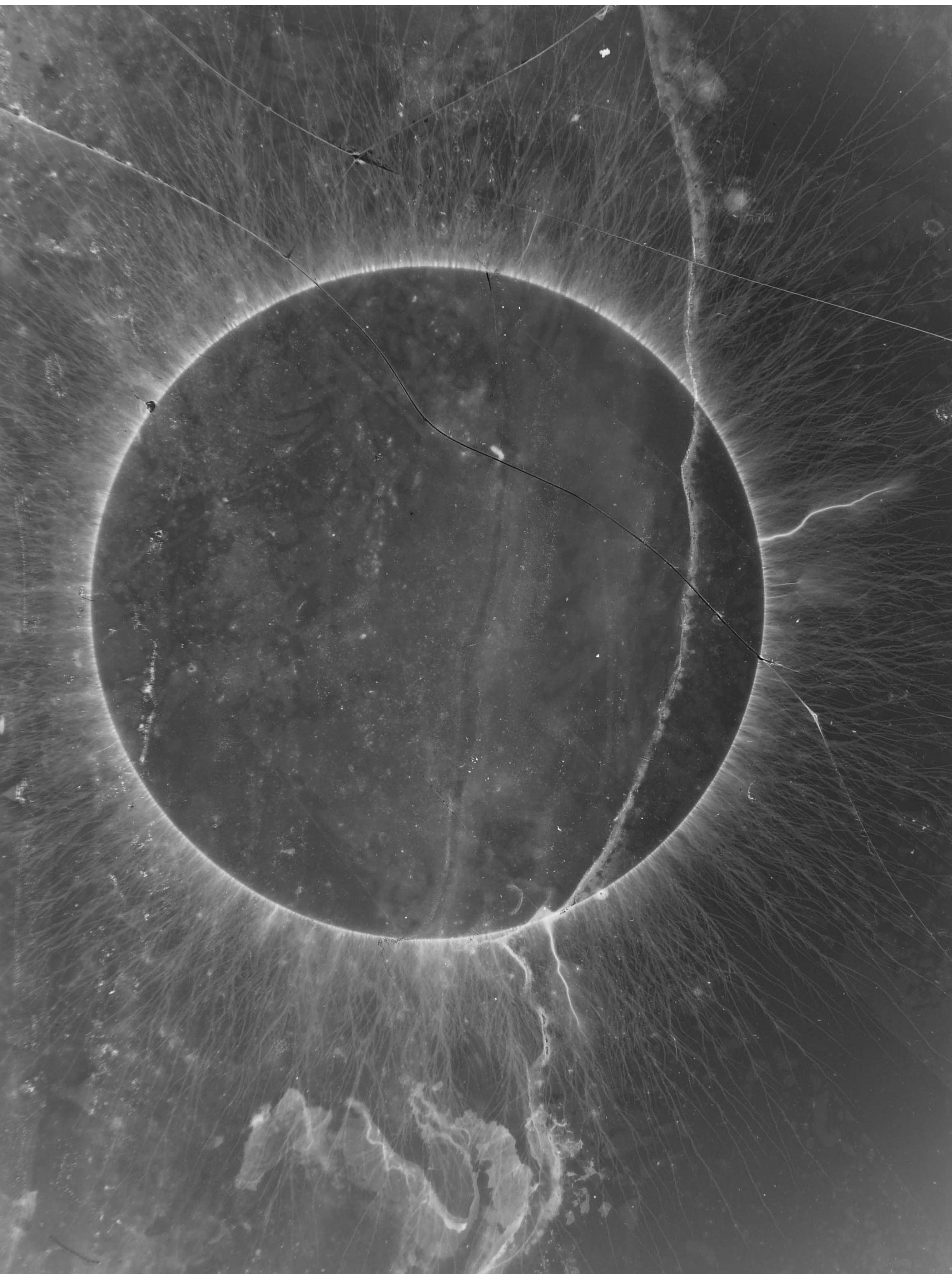


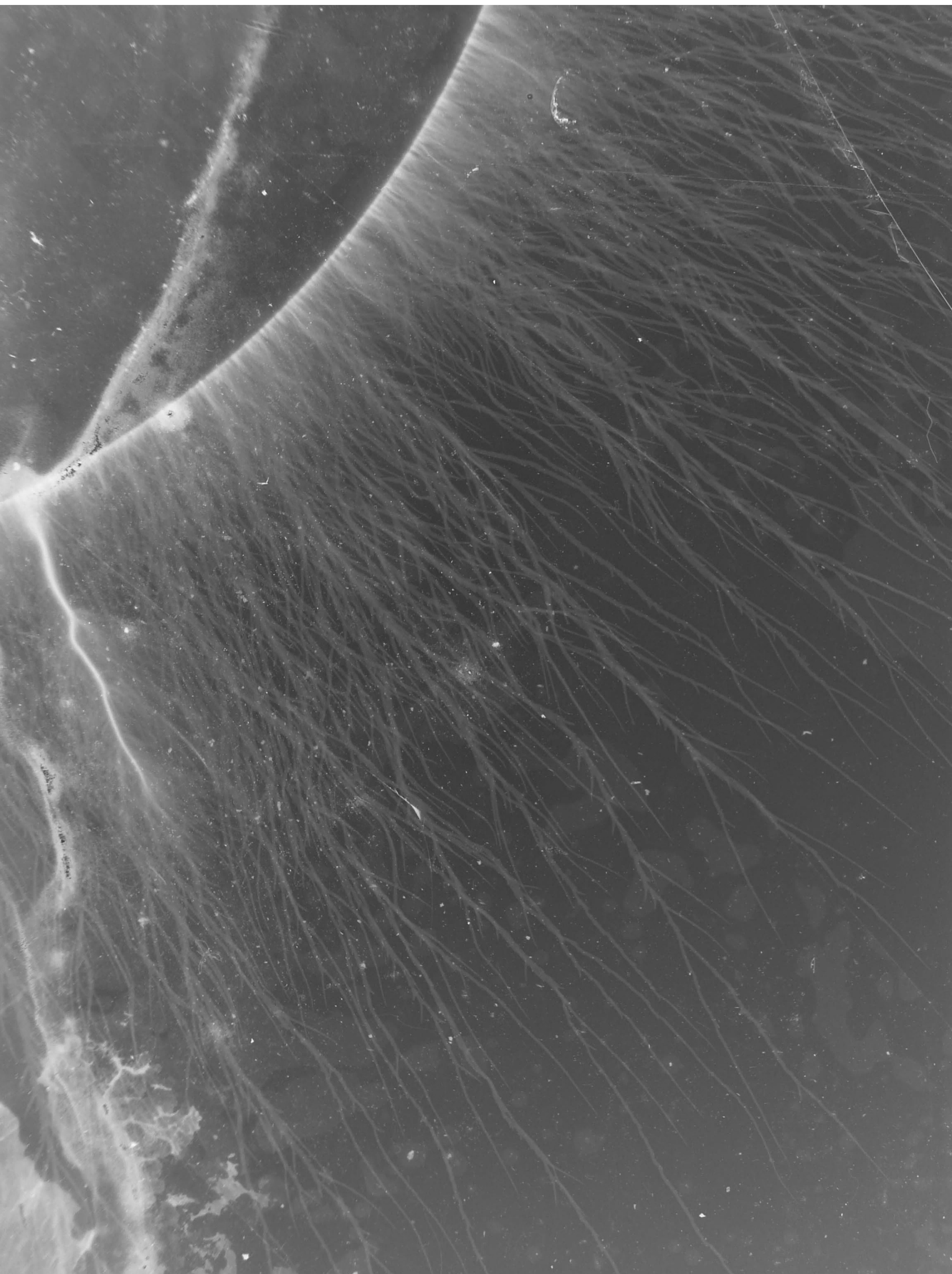








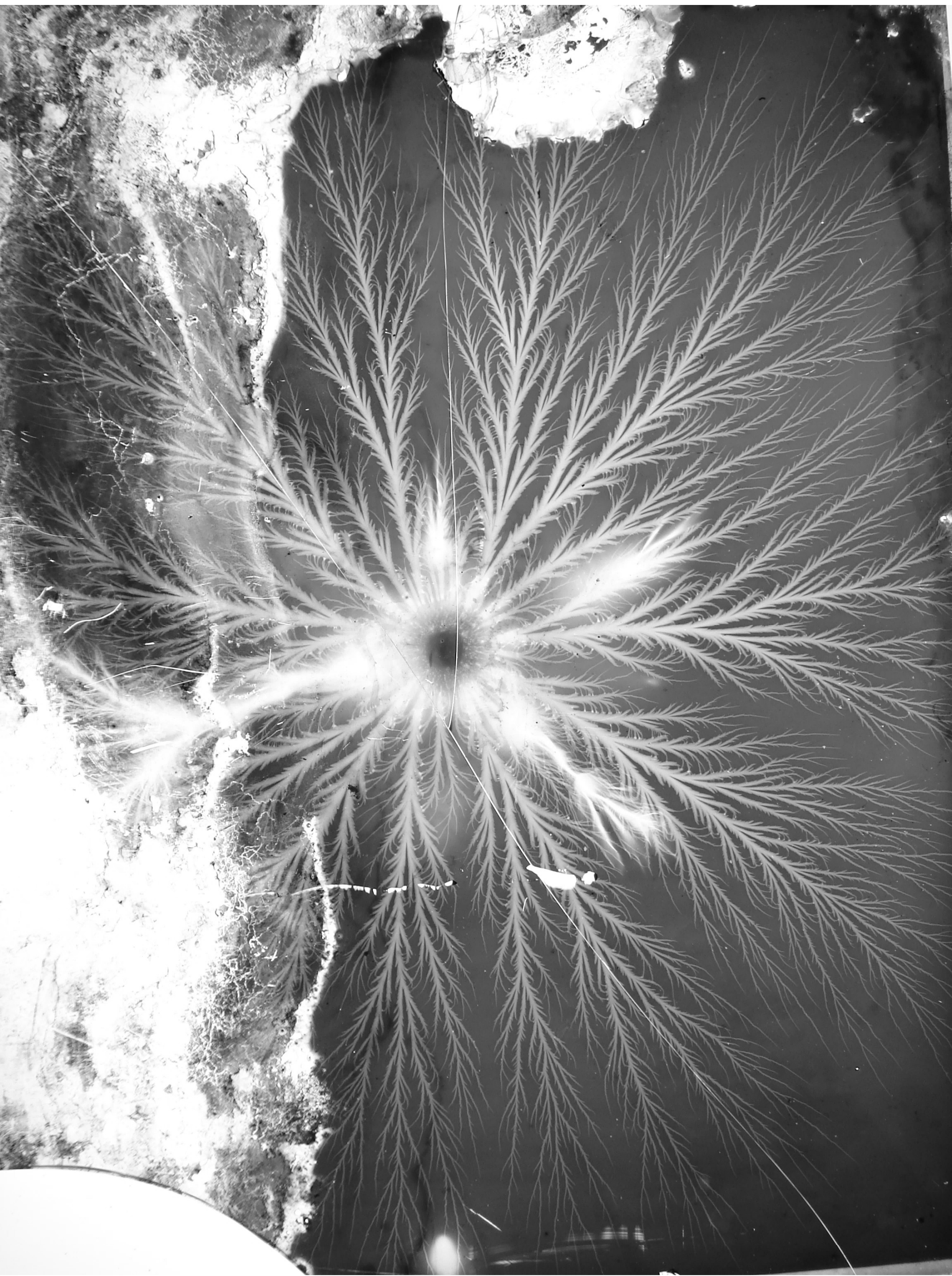


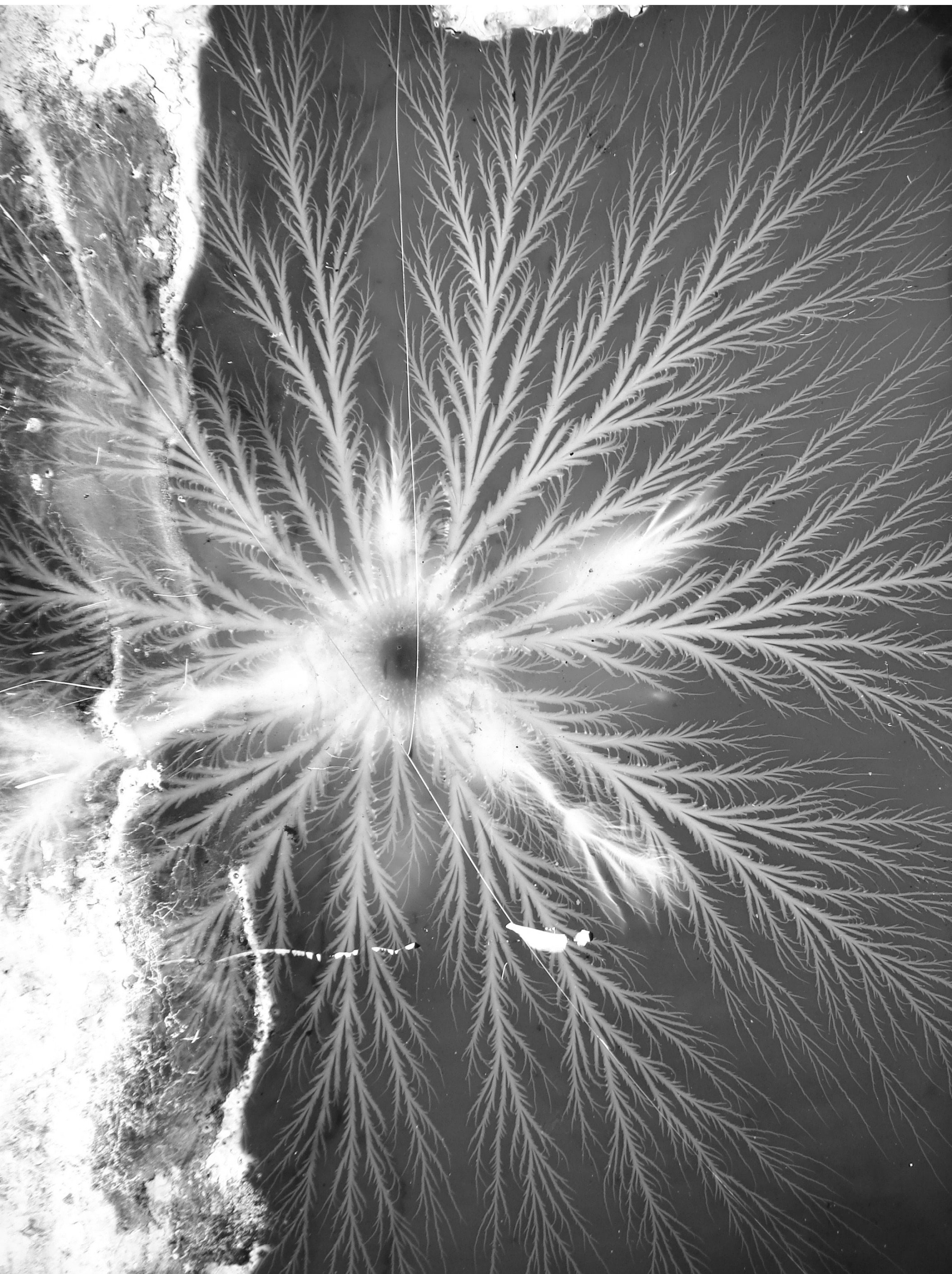


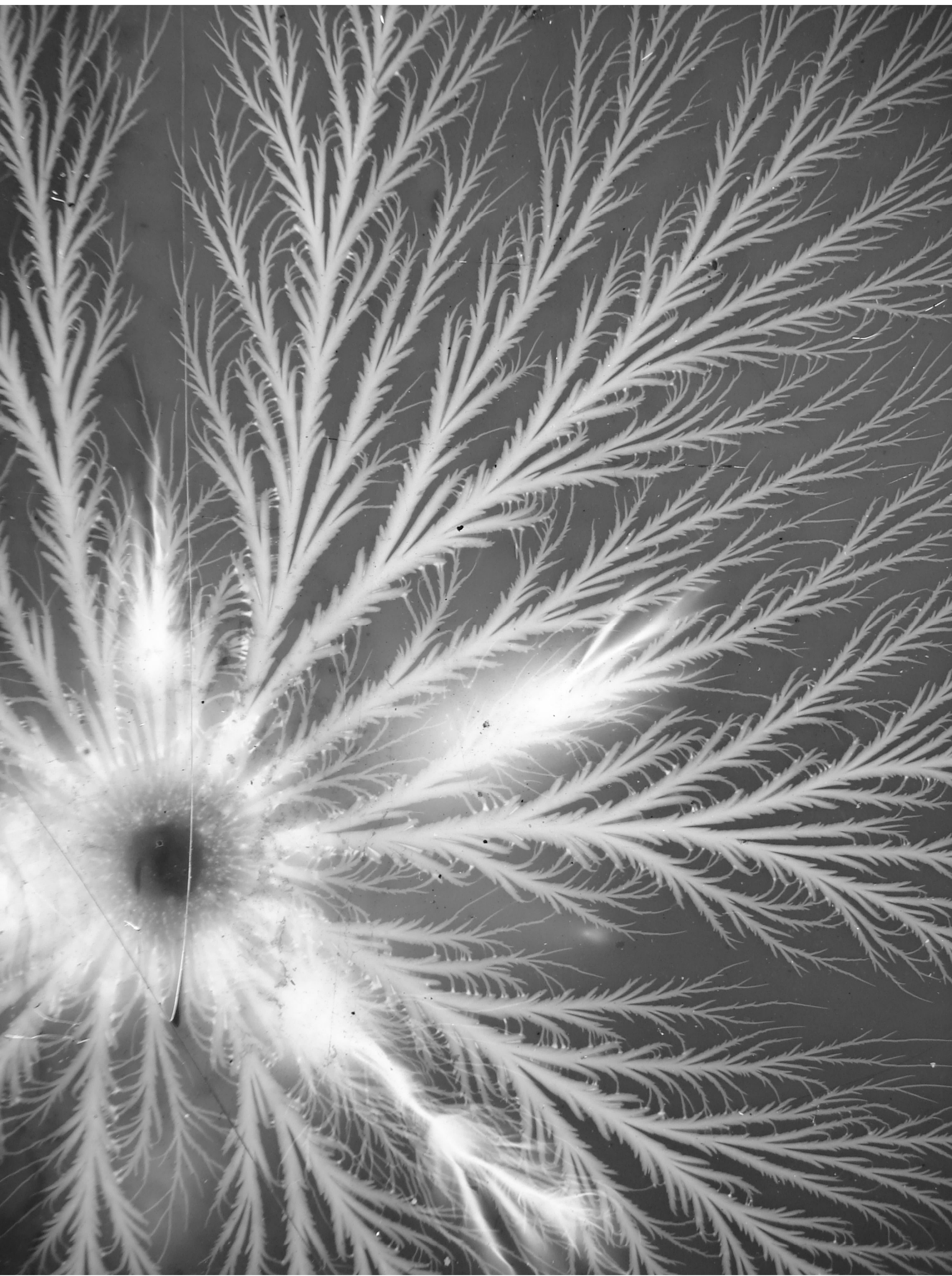


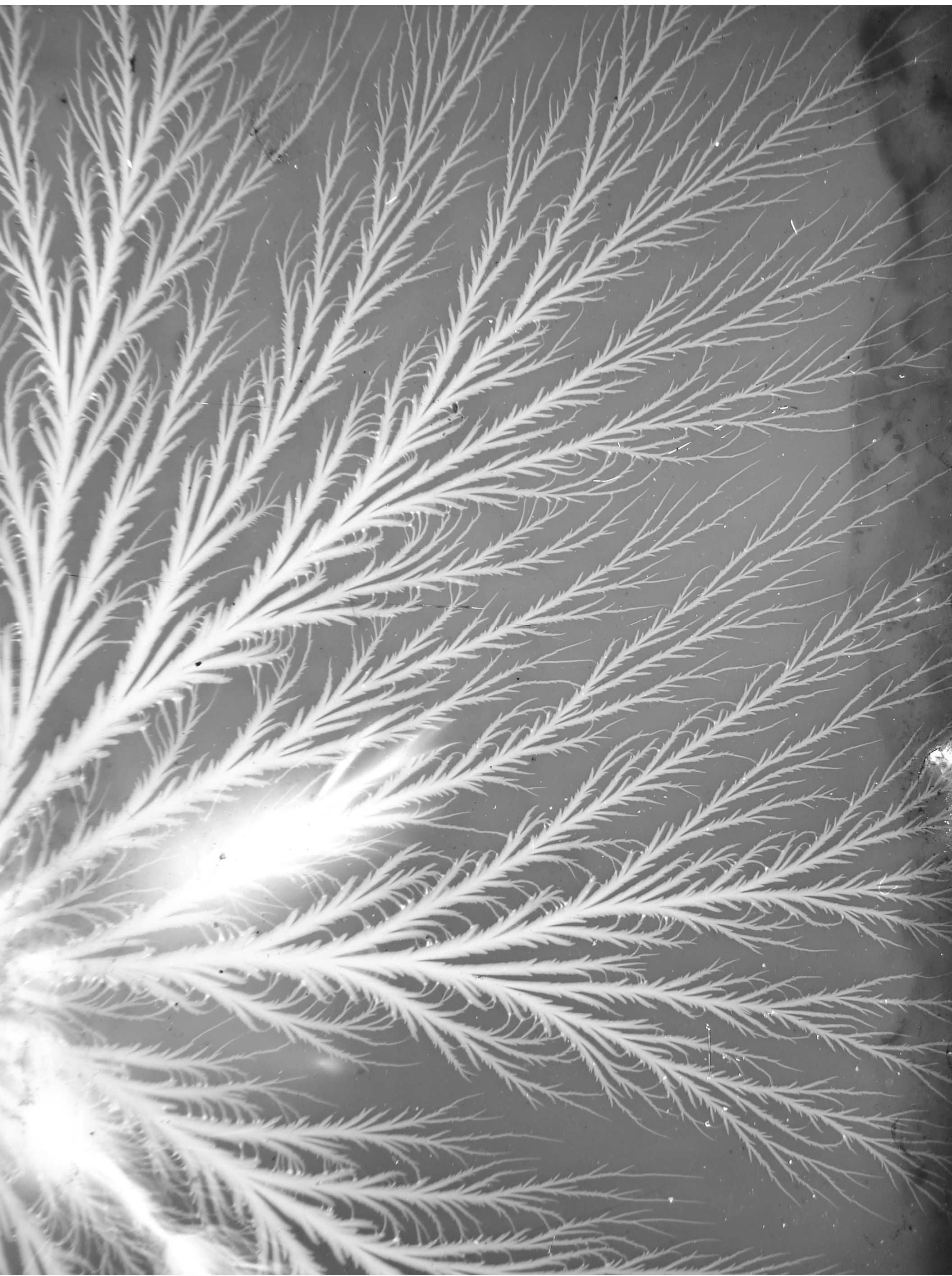






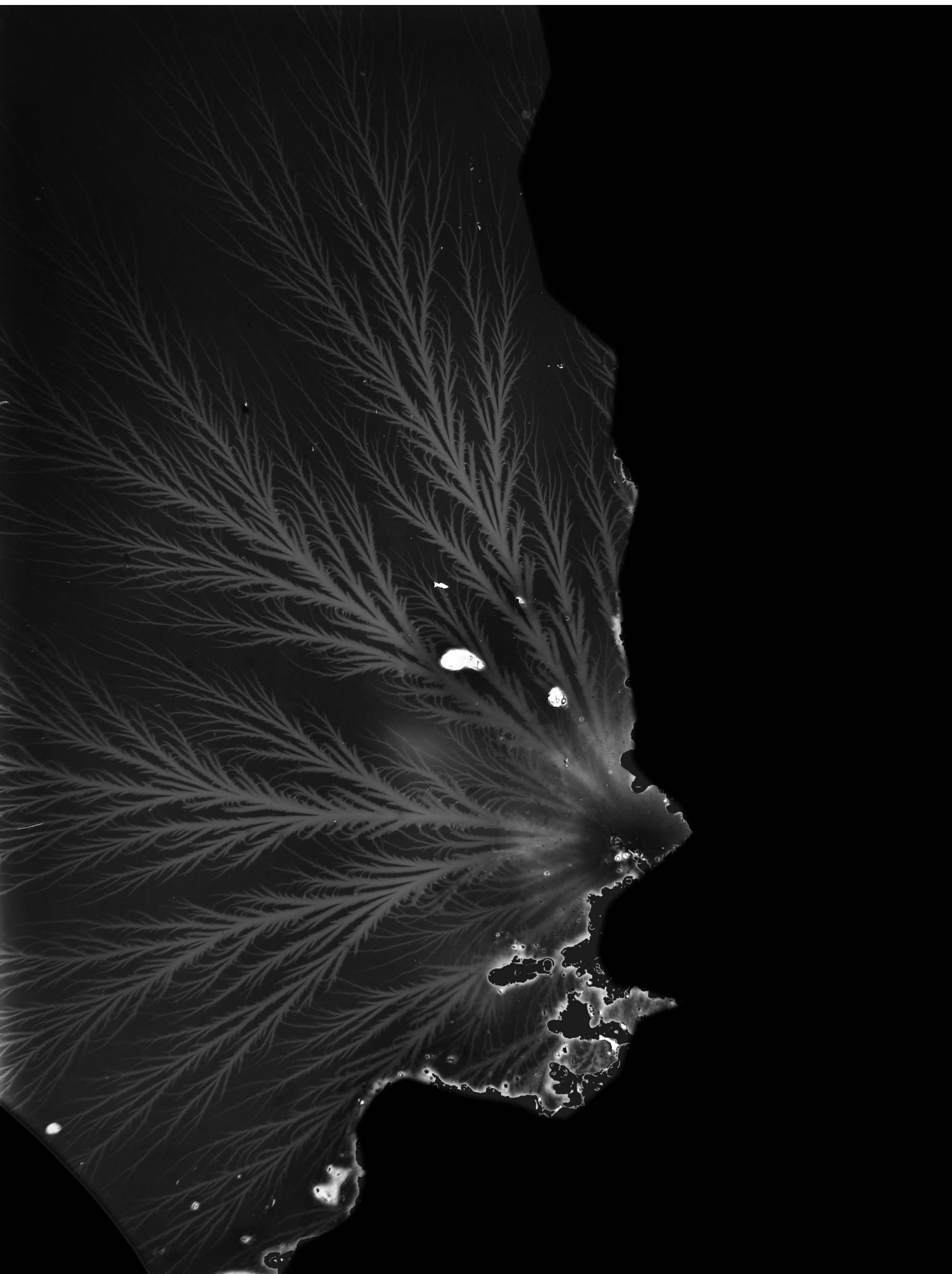




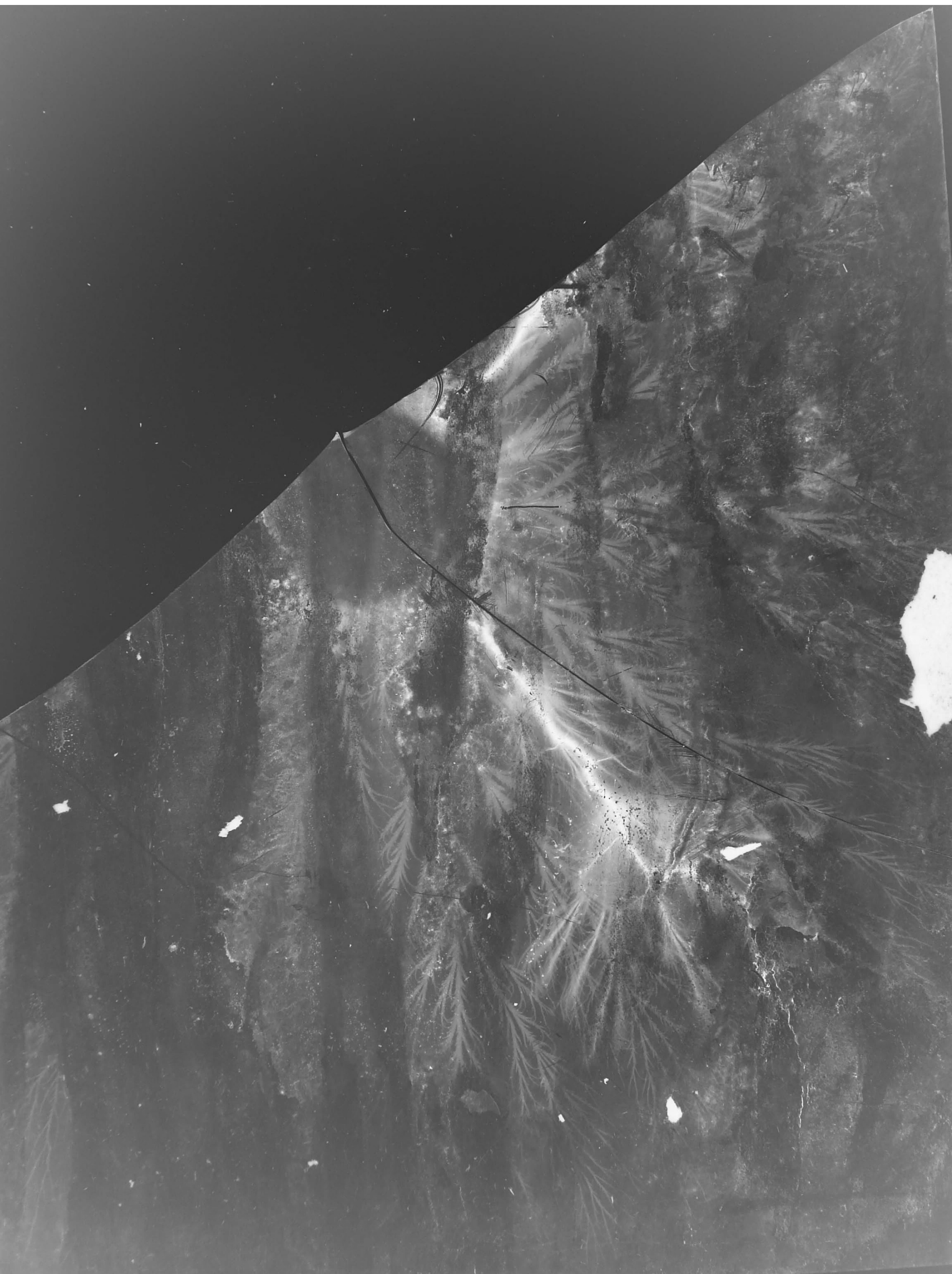








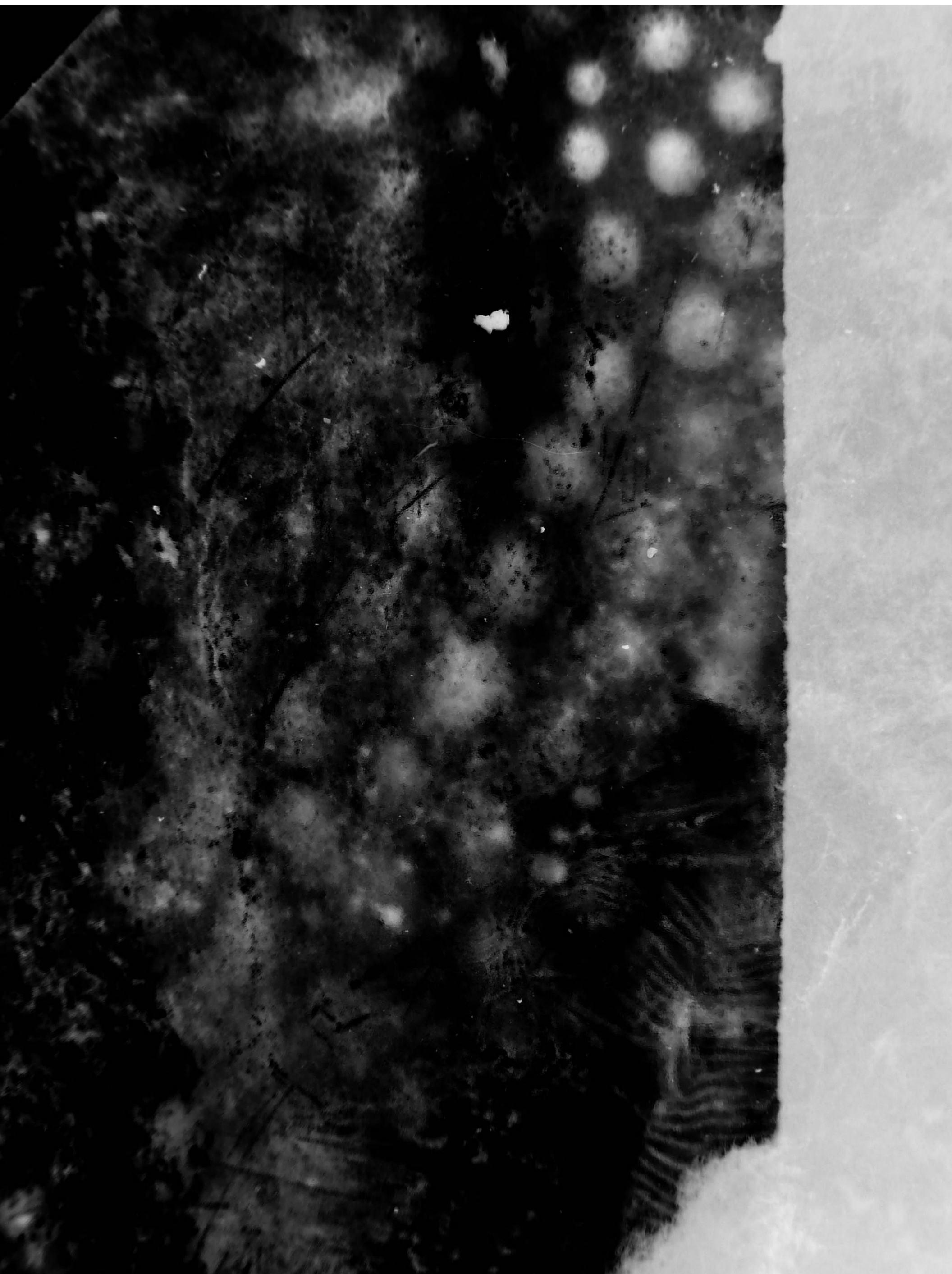




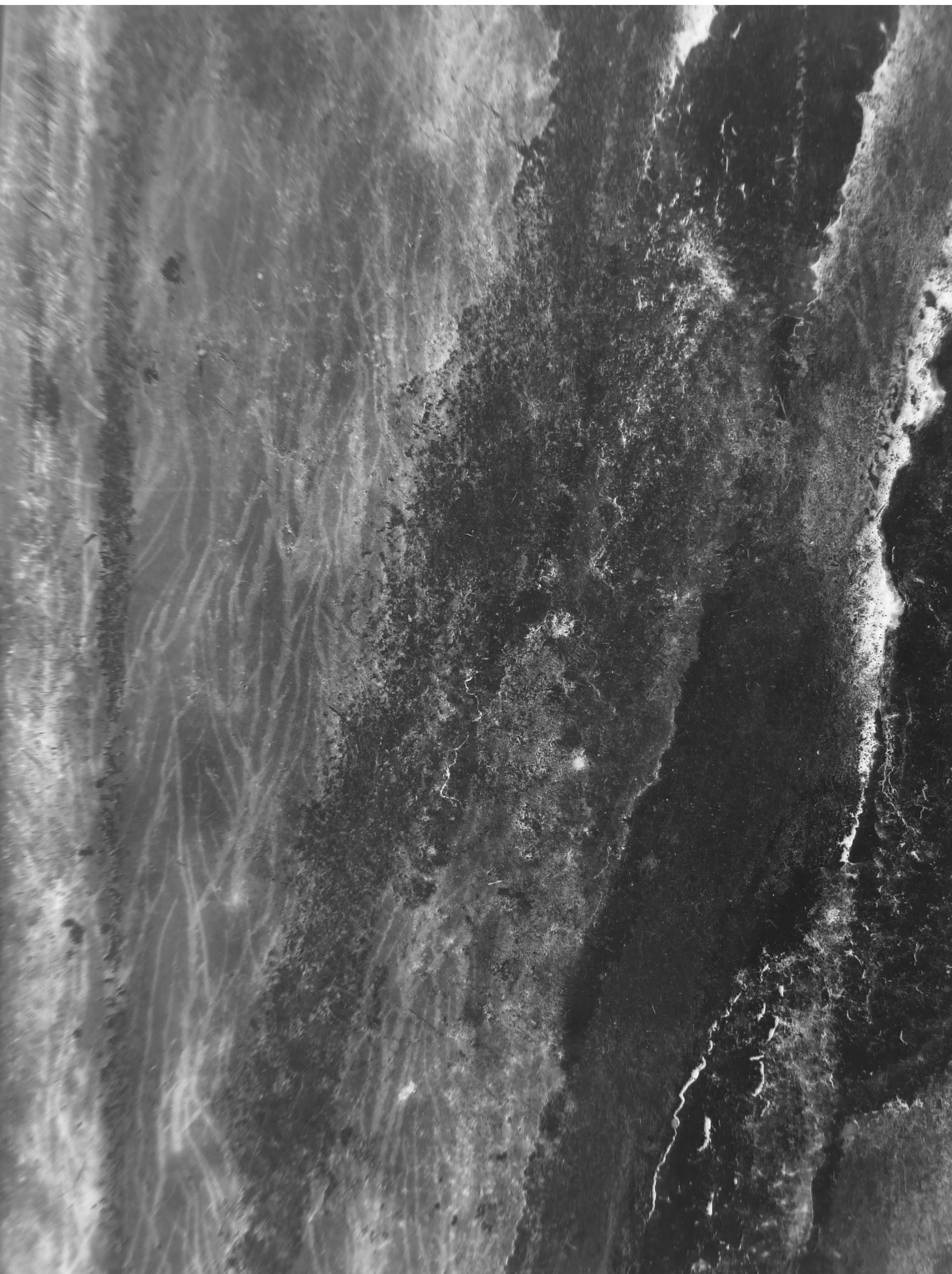




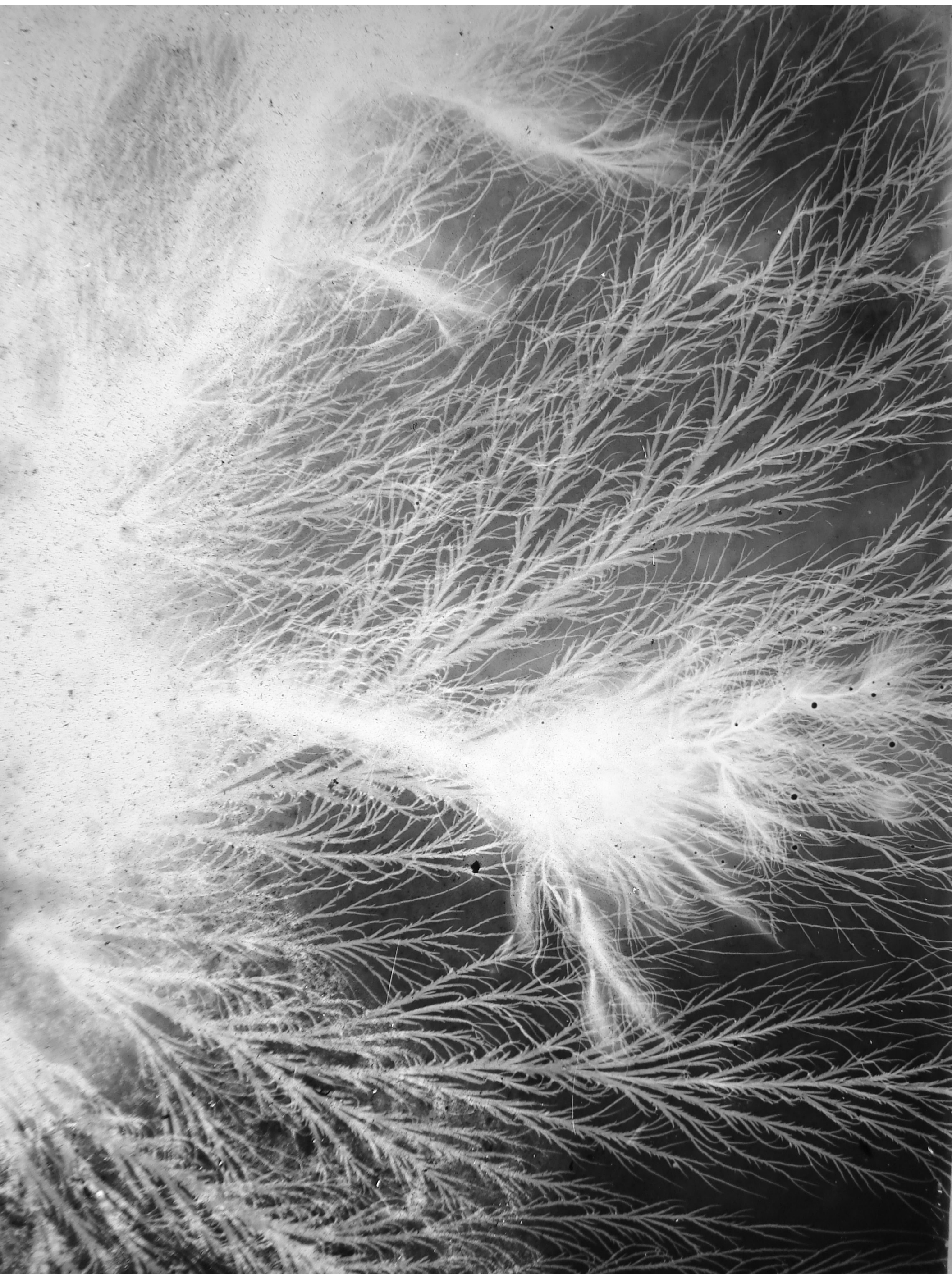










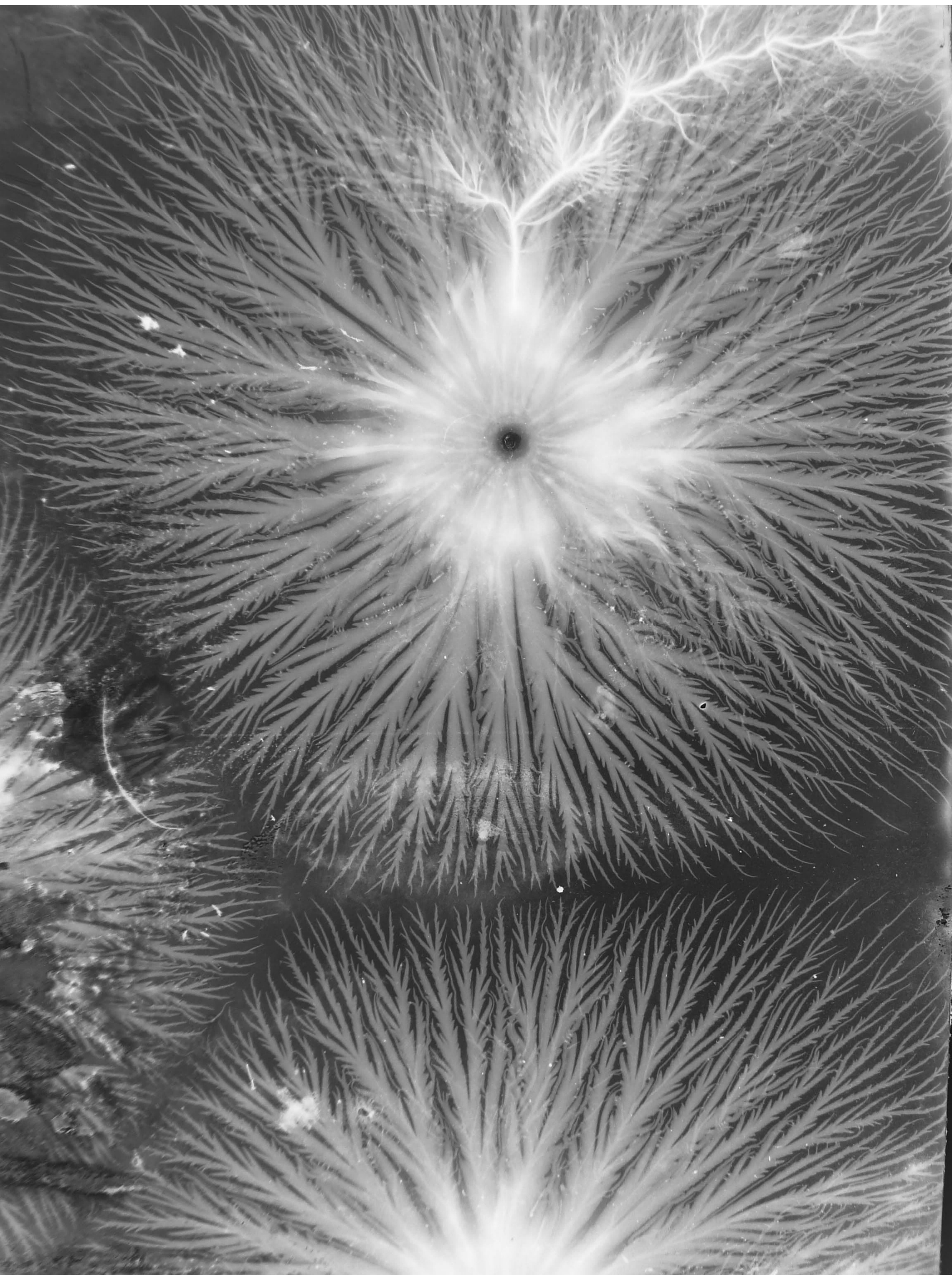




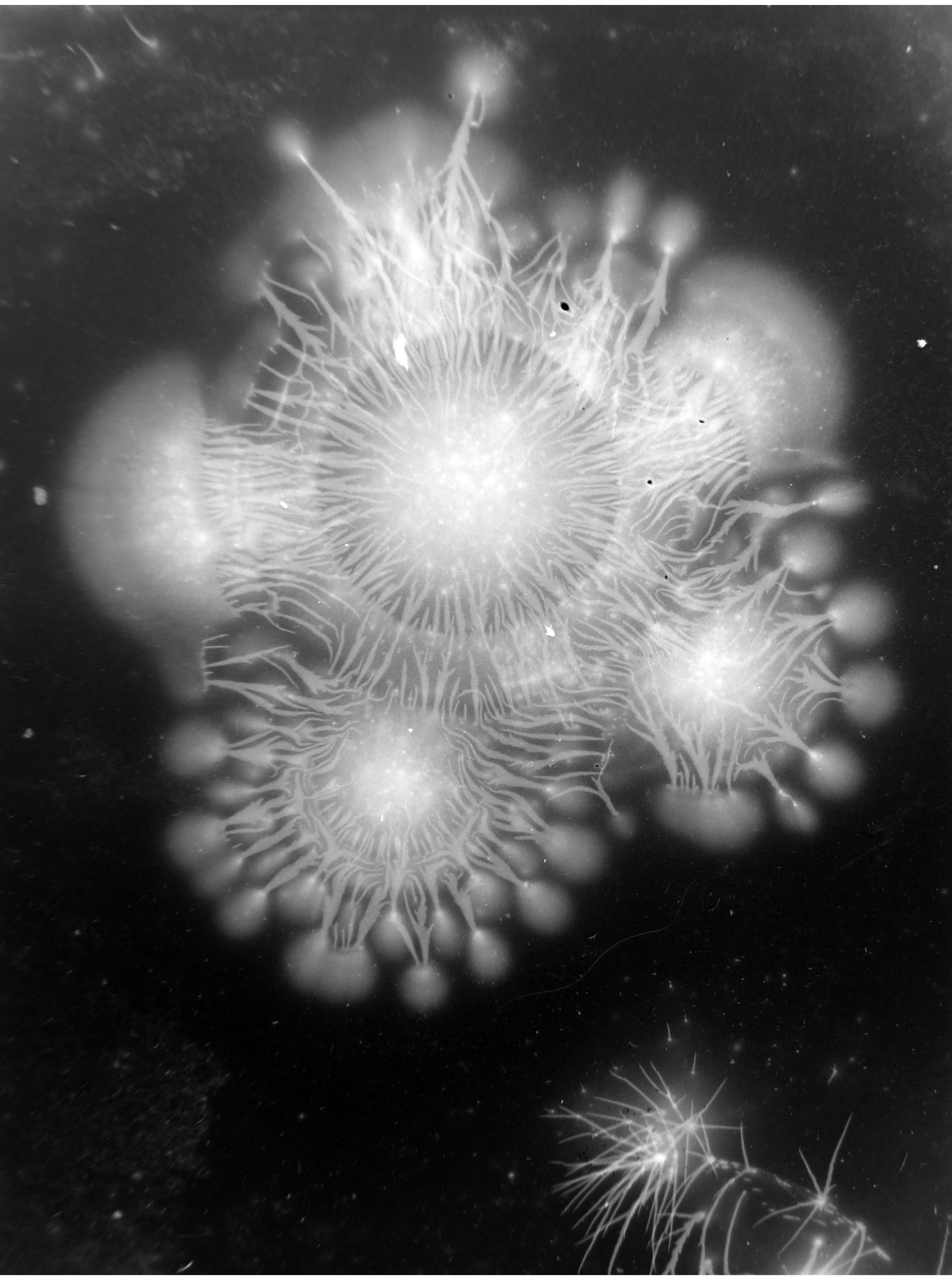




















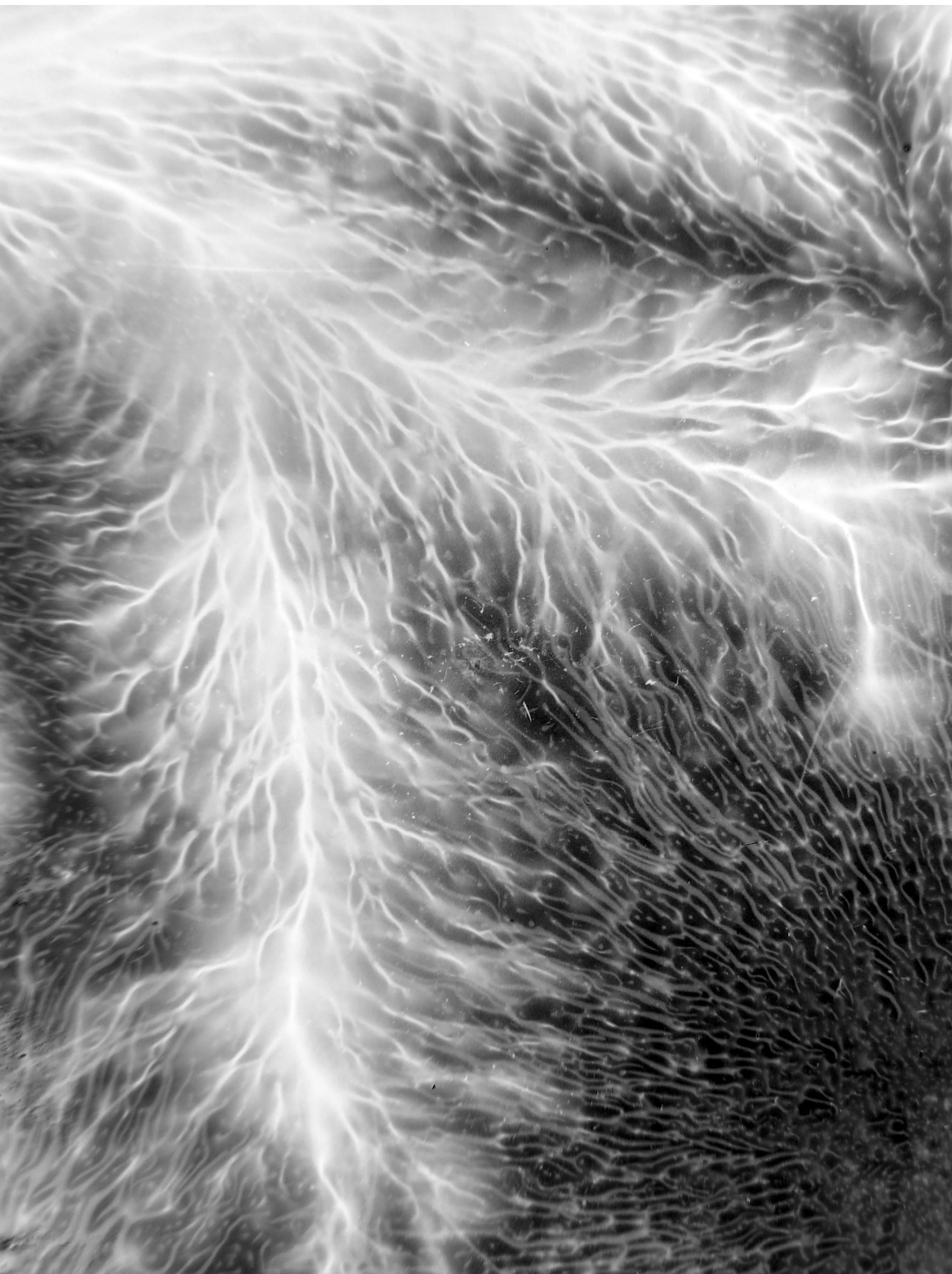






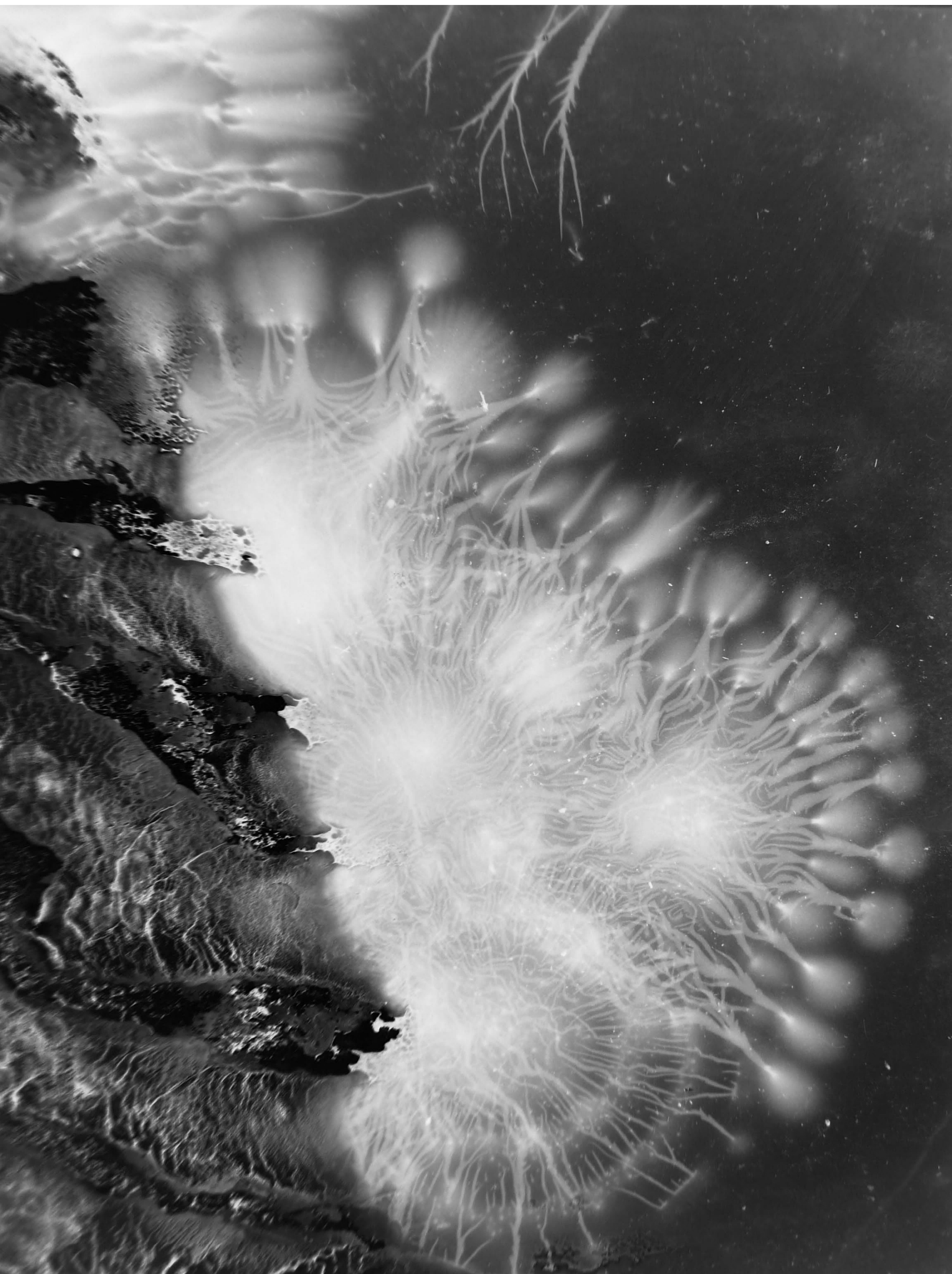


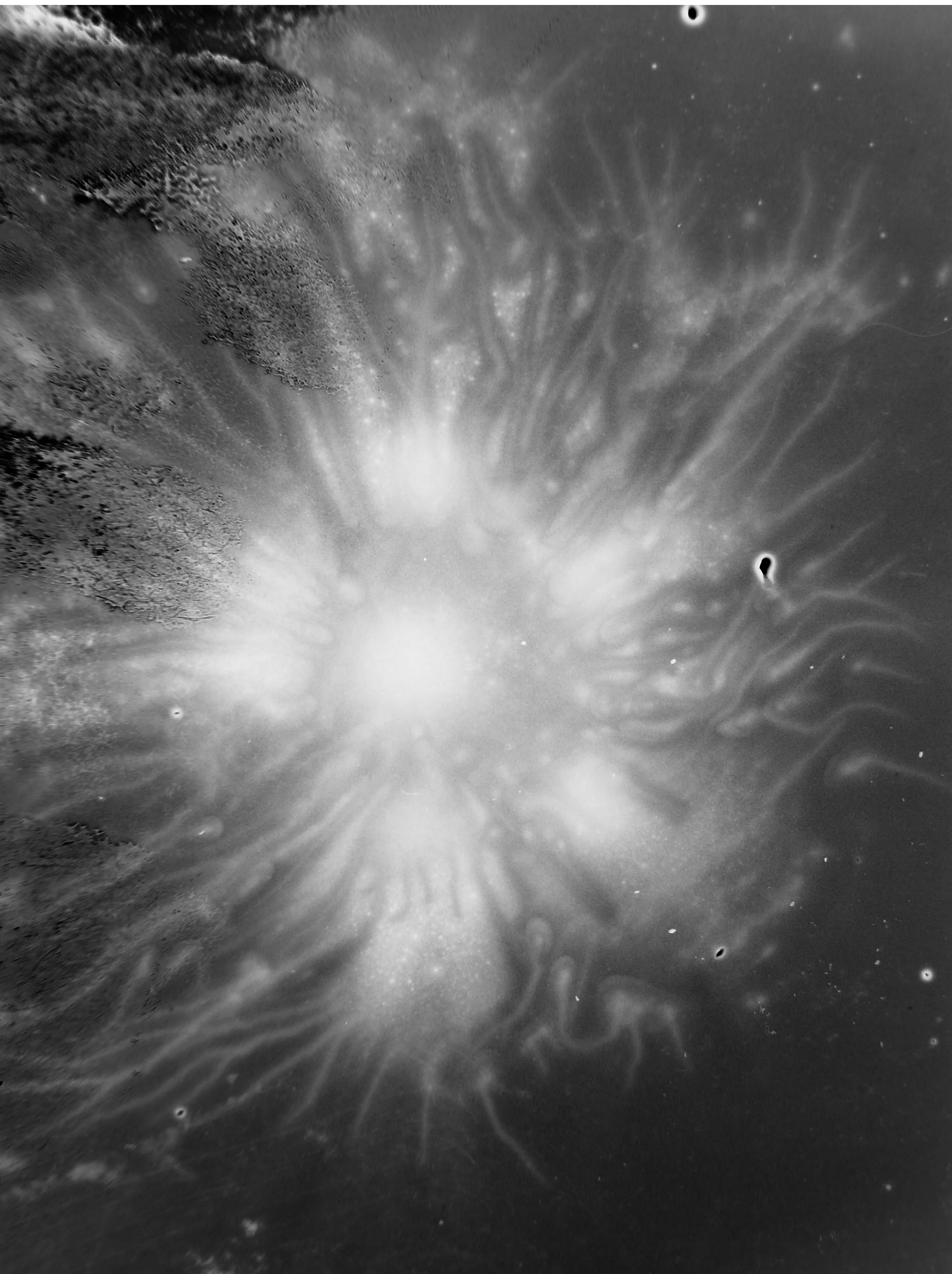




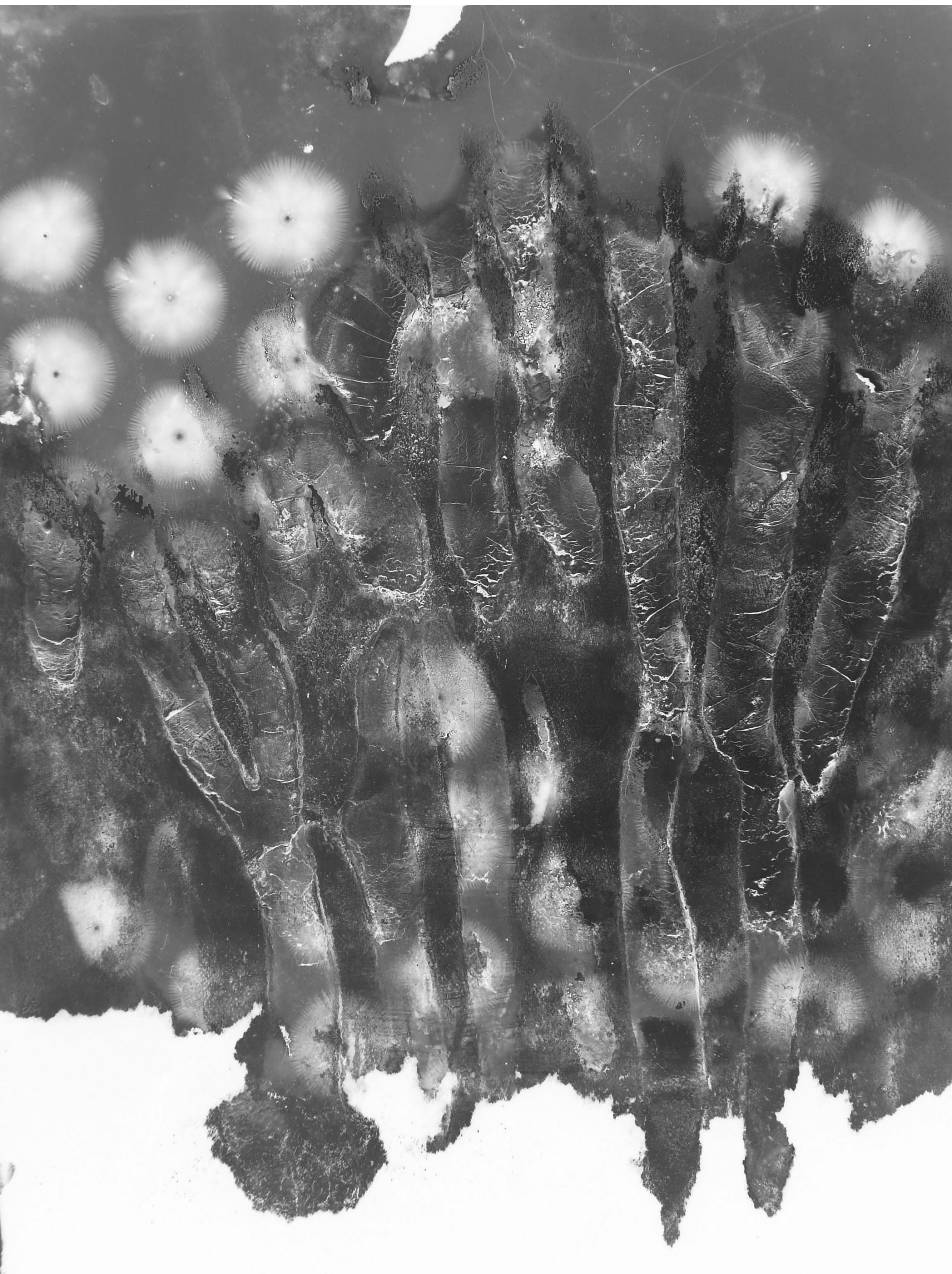












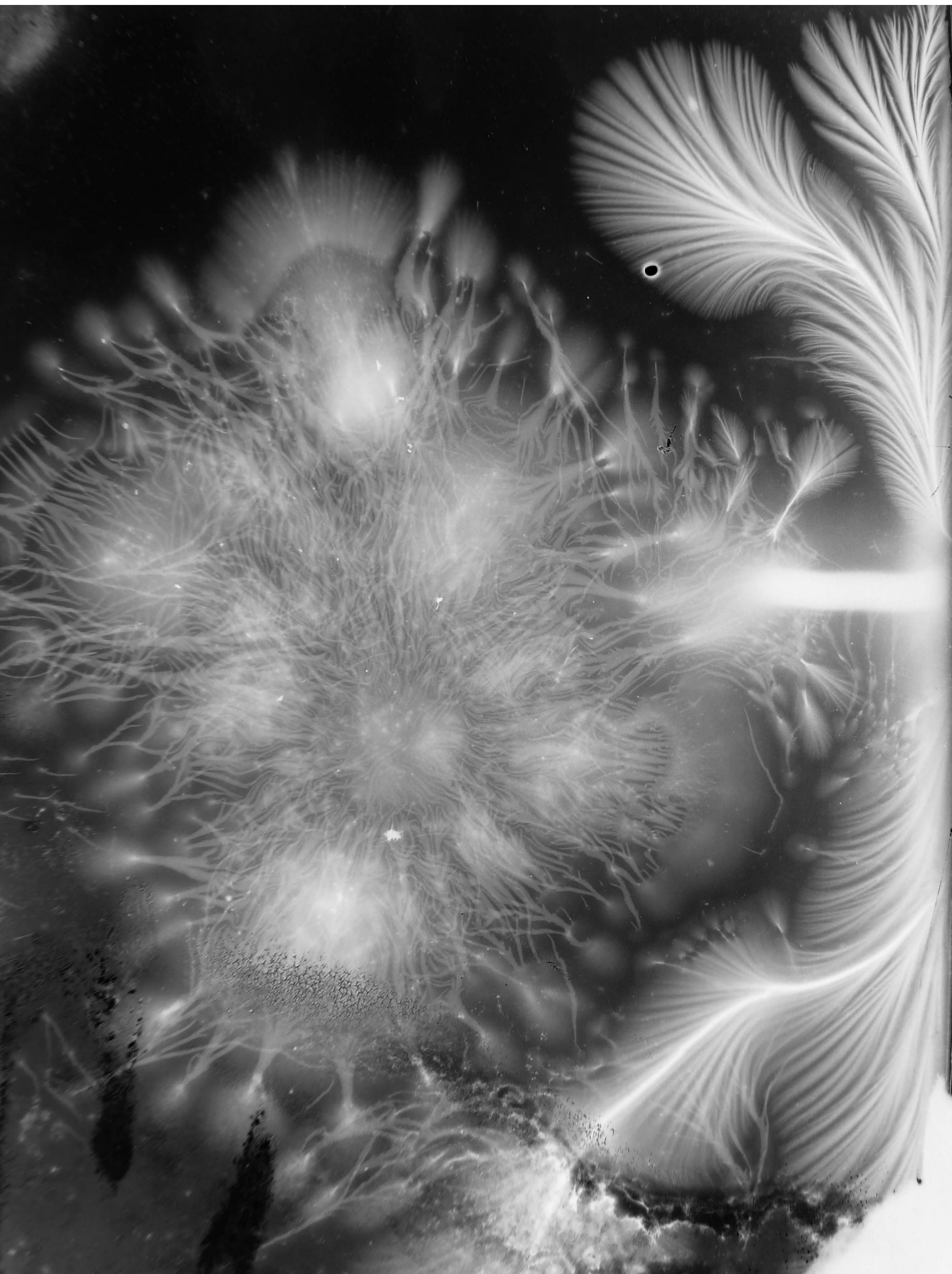






























No. 45.

A STUDY OF THE NEGATIVE PHASE OF
ELECTRICITY.

(Enlarged)
Condenser Series







No. 44.

A STUDY OF THE NEGATIVE PHASE OF
ELECTRICITY.

(Enlarged)

Condenser Series.





COPYRIGHT 1900

BY T. B. KINRAID, NO. 36.

No. 36.

THE ENTITY OF ELECTRICITY.

(Enlarged)

The embodiment of the triple Phase of Electricity. An autographic record of a developing entity of energy. Its Focalization or negative phase; its dynamic or magnetic phase; its diffusion or Positive phase.

The withdrawal of electricity from a portion of a charged condenser surface produces a negative condition relative to the rest of the surface. The Electric force in its change from the Positive to the Negative condition causes the development of the Electric entity. The Negative phase of the entity has its origin and end on the Positive, whilst the Positive phase begins and ends in the negative condition of the plate's surface. The dynamic or magnetic unites the two opposites phases.

Condenser Series.

Y-T.B.KINRAIDE.NO. 36.

No. 36.

THE ENTITY OF ELECTRICITY.

(Enlarged)

The embodiment of the triple Phase of Electricity. An autographic record of a developing entity of energy. Its Focalization or negative phase; its dynamic or magnetic phase; its diffusion or Positive phase.

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Condenser Series.



COPYRIGHT 1900 BY T. S. KINRAIDE. NO. 22.

No. 22.

PRIMARY ENTITIES OF ELECTRICITY.

(Enlarged)

See No. 14.

Discharge of Electricity through a two inch sphere placed upon a photograph plate laid film side down upon a positively charged uncoated condenser surface. The phenomena of the two phases of Electricity in series between condenser surfaces.

Condenser Series.



Copyrighted 1900 by Thomas B. Sherrill

So called Spherical or Ball Electricity. Positive and Negative. The Electric Comet, Enlarged.





Mar 1906, by Thomas B. Kinsley.

Negative Electricity Enlarged.



Copyright 1970 by Thomas & Flonide

Negative Electricity Enlarged.

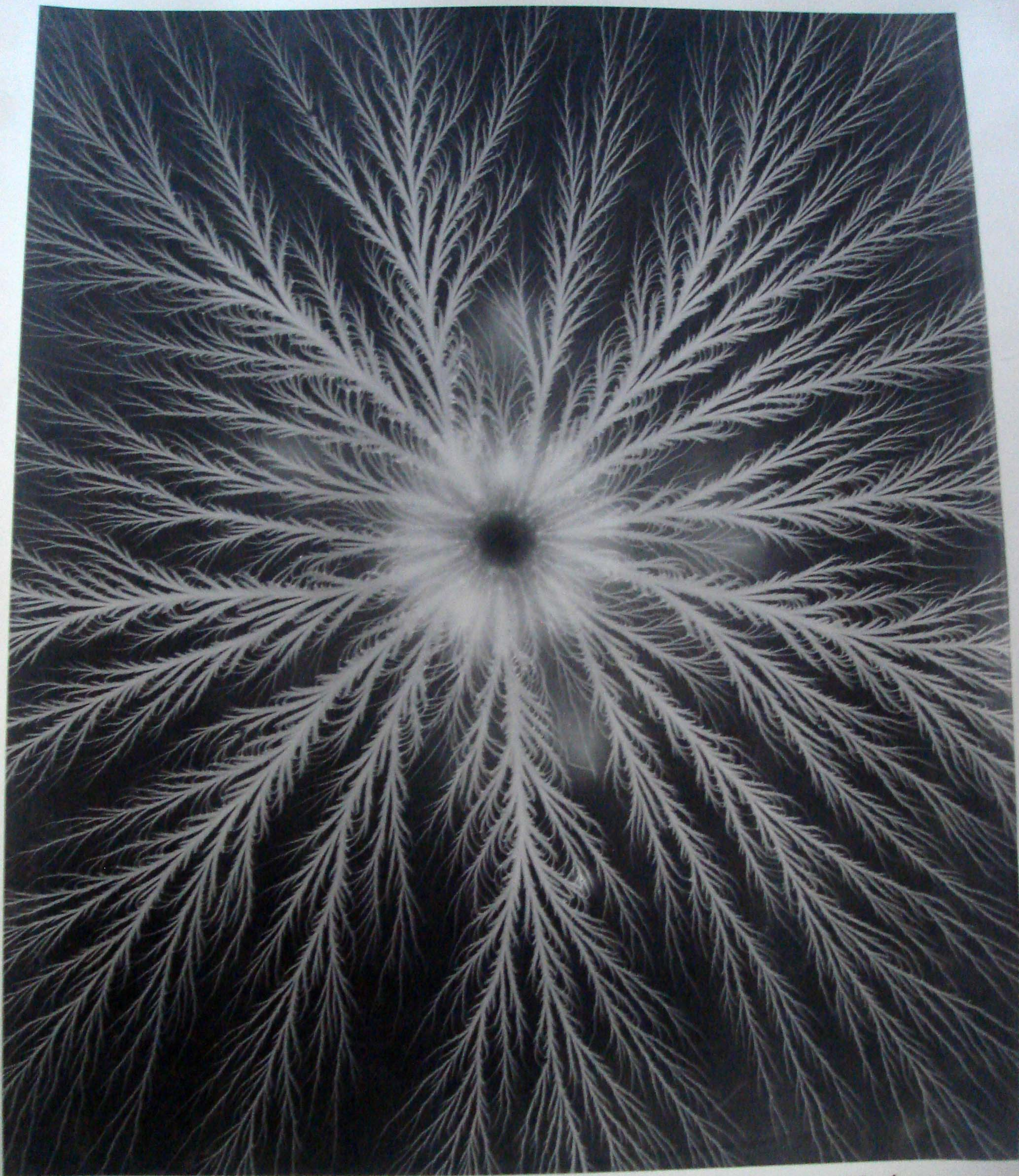


Negative End of Electric Comets.



*The Negative Plume accompanied by an Oscillation of the Positive Electricity.
Low Potential Form of the Filiciform. — Not Enlarged.*





Pure Negative Filiciform Enlarged from 11x14 Plate.



Copyright 1901 by Thomas E. Corbridge

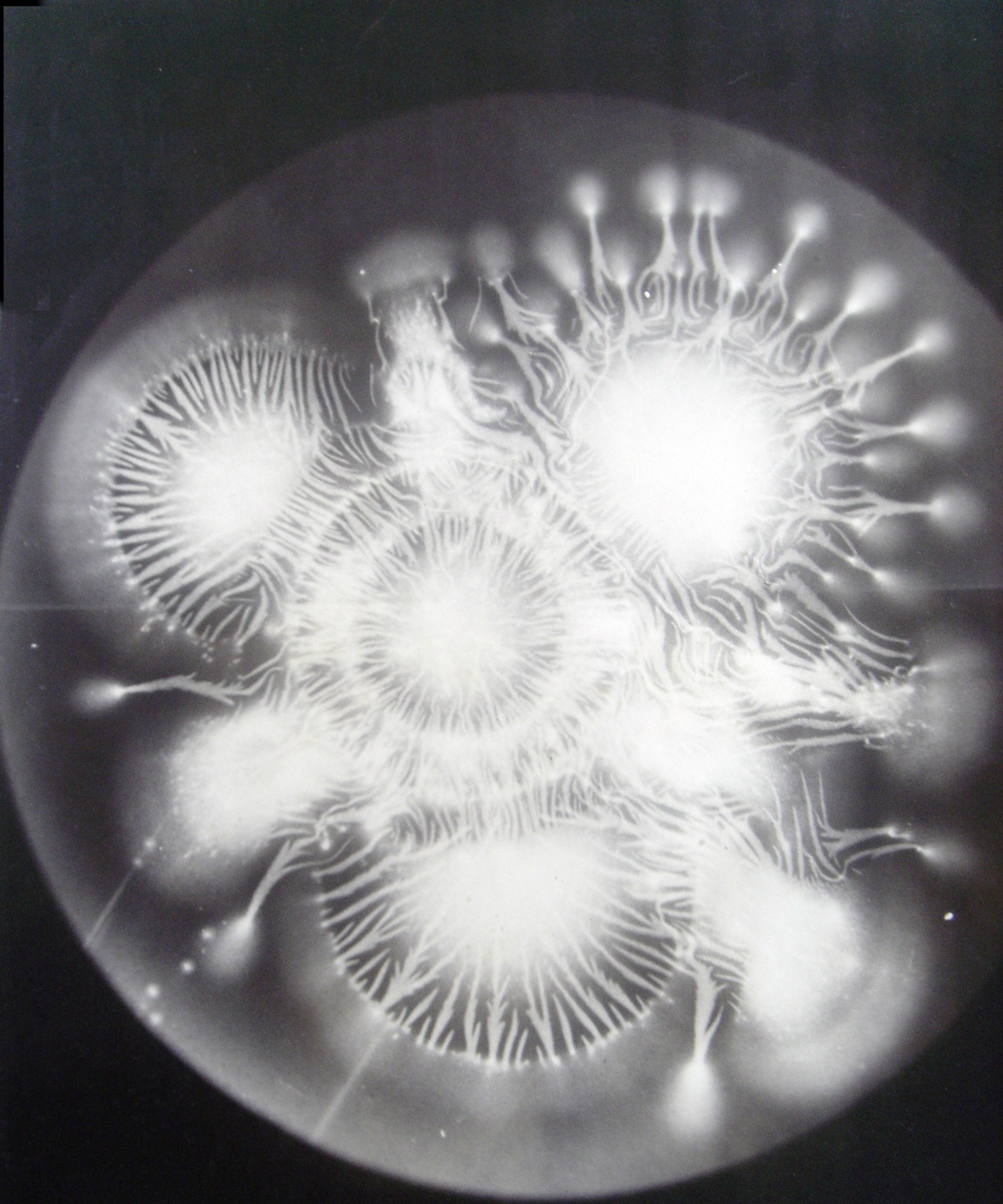
*Very High Potential Oscillation of Positive and Negative Electricity,
Showing the Electric Comets. Not Enlarged.*



Copyright 1900 by J. J. R. R. R.

Positive Electricity with Negative Oscillation, Enlarged.







Copyright 1900 by Thomas A. Edison

Negative Electricity. Not Enlarged.



No. 4.

NEGATIVE PHASE OF ELECTRICITY.

(Enlarged)

Comparison to No. 10.

Taken simultaneously with No. 10. Exhibiting the Negative phase of Electric energy in also a superimposed, broad Positive oscillation. The terminals of a short wire secondary were placed at opposite sides of two photographic plates placed back to back.

—C. D. Dyer.



No. 4.

NEGATIVE PHASE OF ELECTRICITY.

(Enlarged)

Companion to No. 16.

Taken simultaneously with No. 16. Exhibiting the Negative phase of Electric energy as also a superimposed lateral Positive oscillation. The terminals of a short wire secondary were placed on opposite sides of two photographic plates placed back to back.

Condenser Series.



COPYRIGHT 1900 T. B. KIRKLAND 24

No. 24.

A Symmetrical Group of Entities of Electricity.

(Enlarged)

A perfect autographic record of the transfer of Electricity from a Positive to a Negative condition. The Negative phase of the Electric entity has its origin in the Positive, while the Positive phase begins and ends in the Negative condition of the photo's surface. A discharge of Positive Electricity from an insulated condenser through a two inch sphere connected to the Negative side.

Condition: Series.

No. 24.

A Symmetrical Group of Entities of Electricity.

(Enlarged)

A perfect autographic record of the transfer of Electricity from a Positive to a Negative condition. The Negative phase of the Electric entity has its origin in the Positive, whilst the Positive phase begins and ends in the Negative condition of the plate's surface. A discharge of Positive Electricity from an uncoated condenser through a two inch sphere connected to the Negative side.

Condenser Series.

COPYRIGHT 1900 BY J. B. KIRKLAND NO. 29.

No. 29.

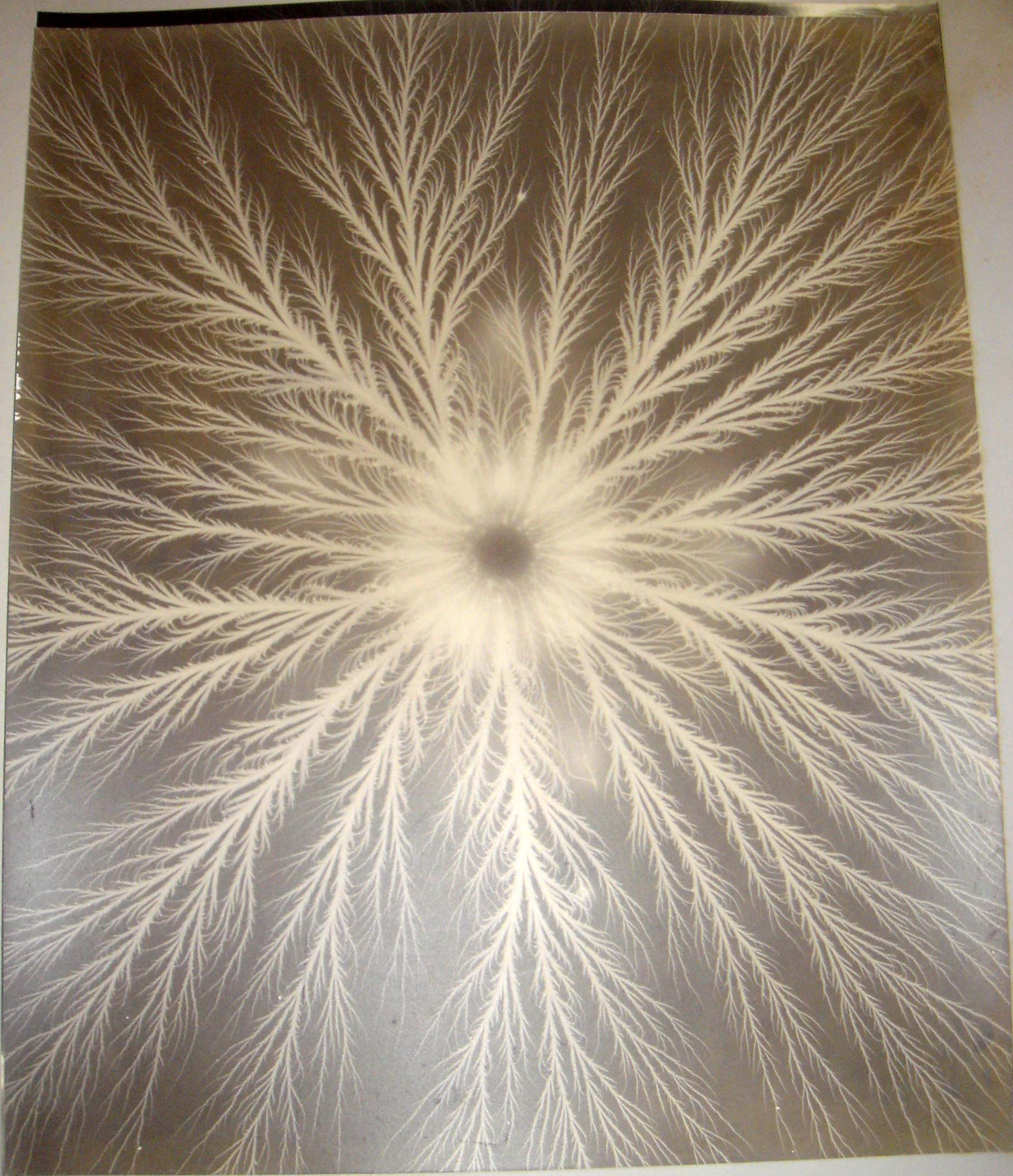
PRIMARY ENTITIES OF ELECTRICITY.

(Enlarged)

See No. 14.

Discharge of Electricity through a two inch sphere placed upon a photograph plate laid flat upon a positively charged uncoated condenser surface. The phenomena of the two phases of Electricity in action between condenser surfaces.

Enlarged from



Discharge from a five inch sphere by T. B. Rensselaer

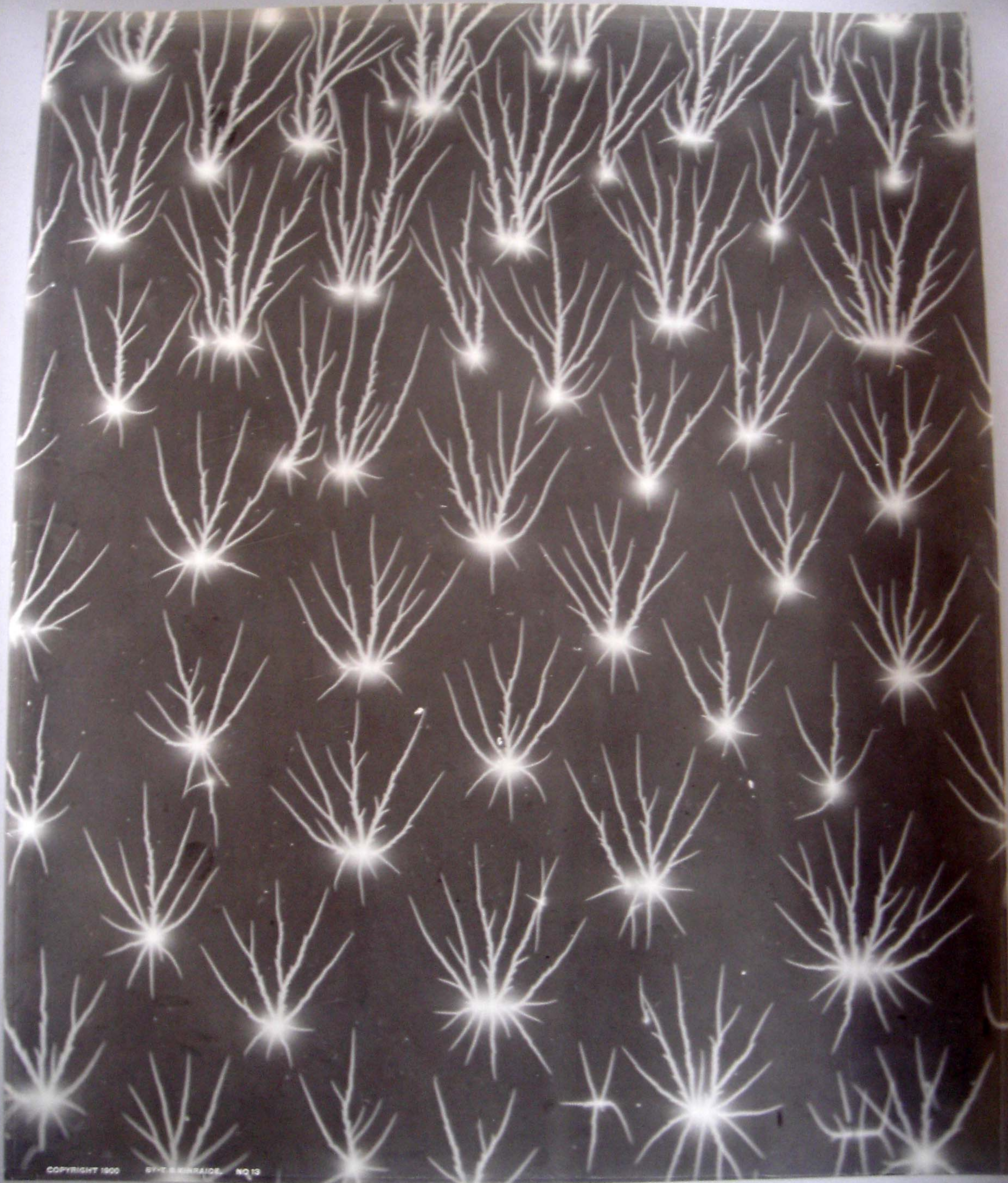
No. 11.

PURE POSITIVE — The Filiciform.

(Enlarged)

Discharge from a five inch Sphere upon the surface of a photographic plate placed upon the Sphere.

Short Wire, Secondary Series.



COPYRIGHT 1900

BY E. S. KIRKALDIE, NO. 13

No. 13.

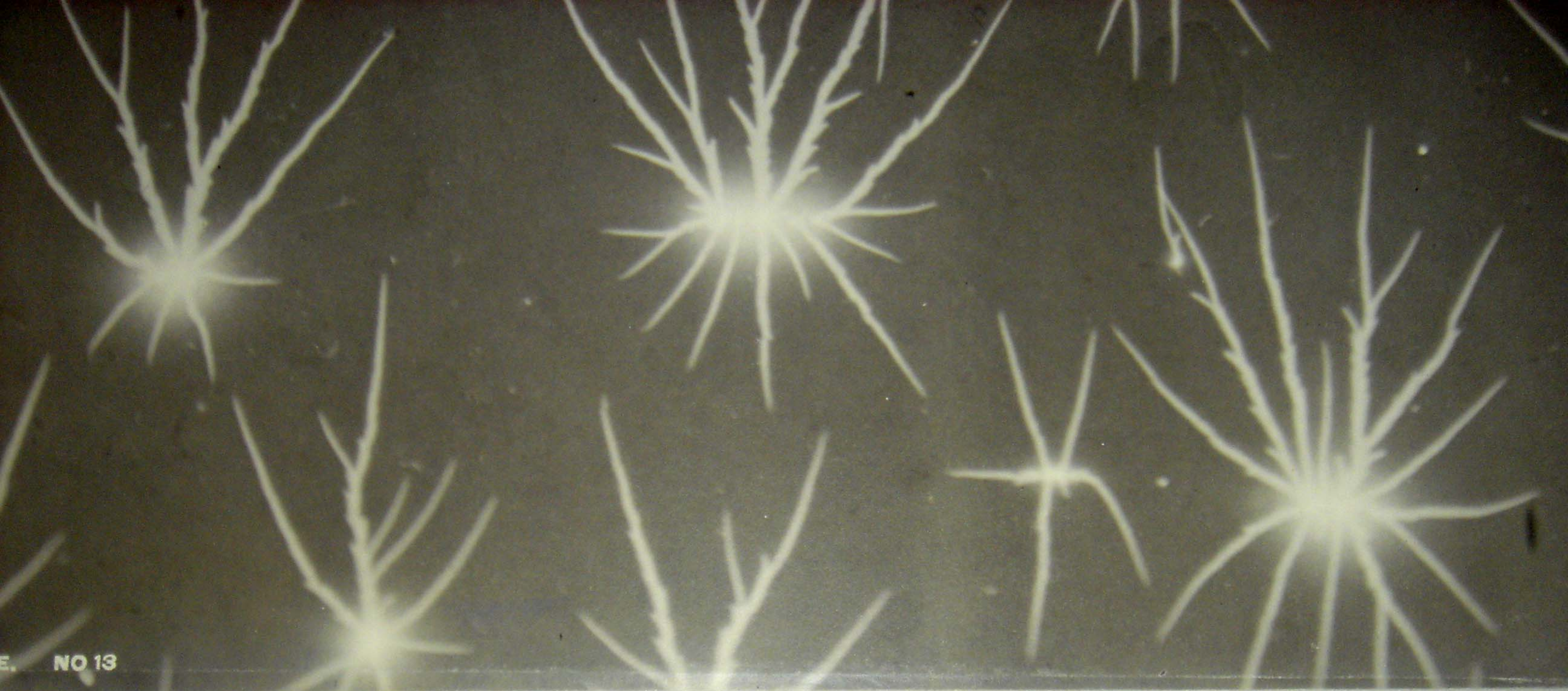
POSITIVE END OF ELECTRIC COMETS.

(Enlarged.)

Continued to No. 12.

Discharge of Electric energy from a small metallic rod in its passage near the film side of a photograph plate placed upon the Negative surface of a charged condenser.

Continued from



E. NO 13

No. 13.

POSITIVE END OF ELECTRIC COMETS.

(Enlarged)

Companion to No. 15.

Discharge of Electric energy from a small metallic rod in its passage near the film side of a photograph plate placed upon the Negative surface of a charged condenser.

Condenser Series.



Electric Comets in Flight. The Negative end of the Comets in advance. So called Spherical or Ball Electricity. The Positive and Negative Electricity as always and inseparably united. Enlarged.



Copyright 1900 by Thomas A. Edison
Electric Comets in Flight. The Negative end of the Comets in advance. So called Spherical or Ball Electricity. The Positive and Negative Electricity as always and inseparably united. Enlarged.



COPYRIGHT 1900 BY T. B. KINRAIDE. NO. 18

No. 18

NEGATIVE ELECTRICITY.

The Plumous.

Companion to No. 19.

(Enlarged)

Emileux, Paris.



IDE. NO 18

No. 18

NEGATIVE ELECTRICITY.

The Plumous.

Companion to No. 19.

(Enlarged)

Condenser Series.



COPYRIGHT 1900 BY T. B. KIRKLAND. NO 1a

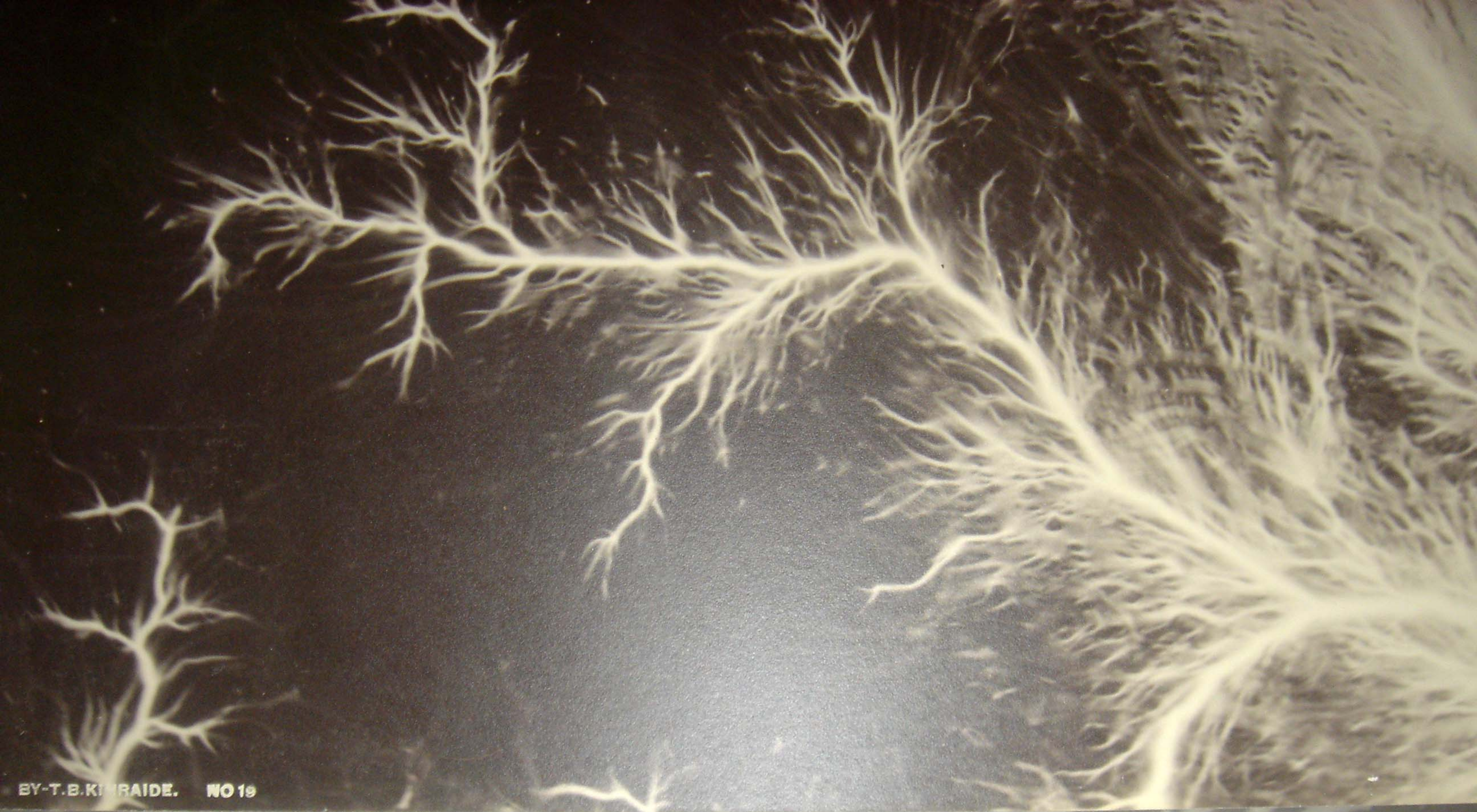
No 1a.

POSITIVE ELECTRICITY.
Low Potential Filiciform.

Companion to No. 1b.

(Enlarged)

Unimpaired Form



BY-T.B.KIMRAIDE. NO 19

No 19.

POSITIVE ELECTRICITY.

Low Potential Filiciform.

Companion to No. 18.

(Enlarged)

Condenser Series.

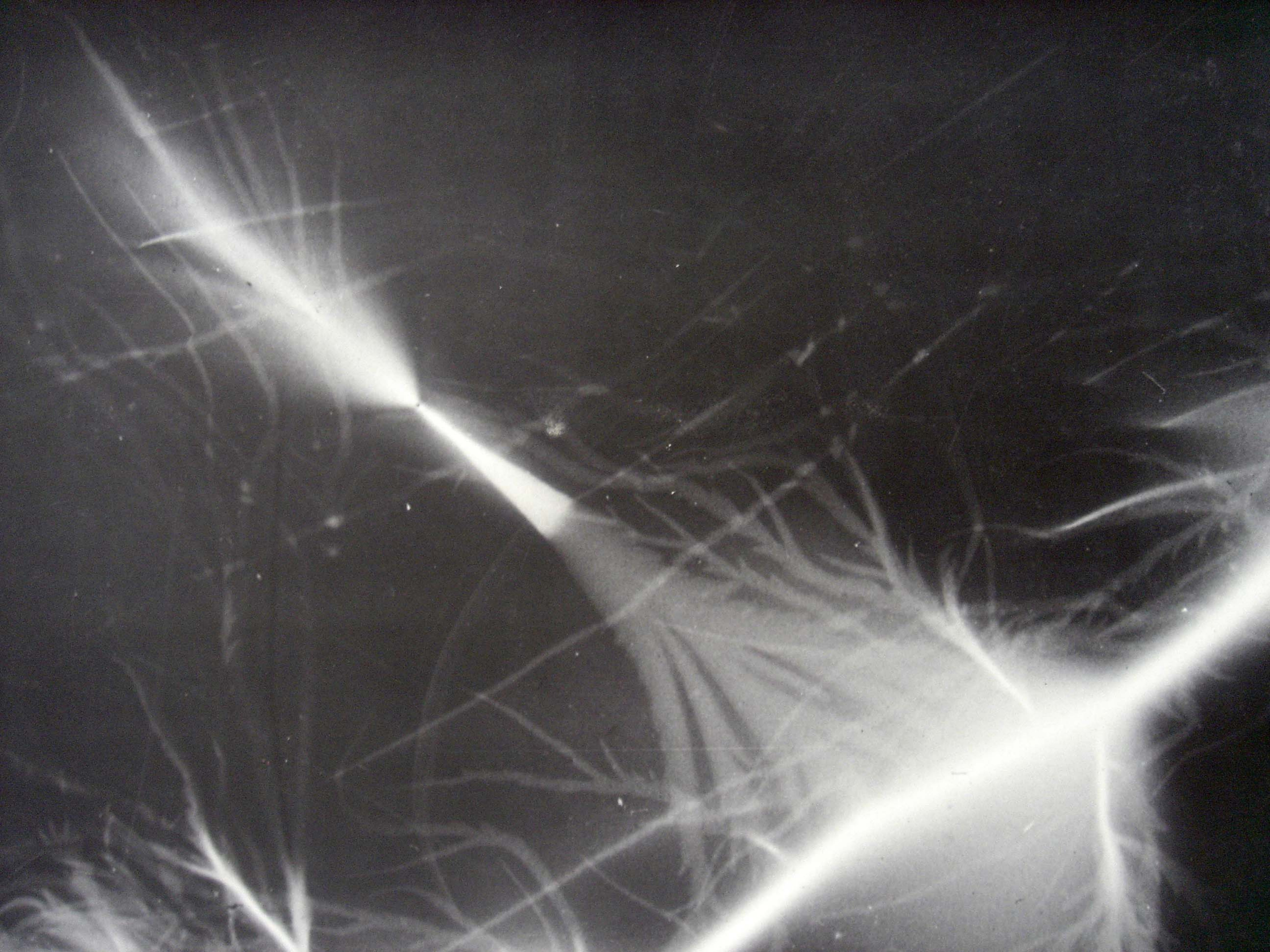


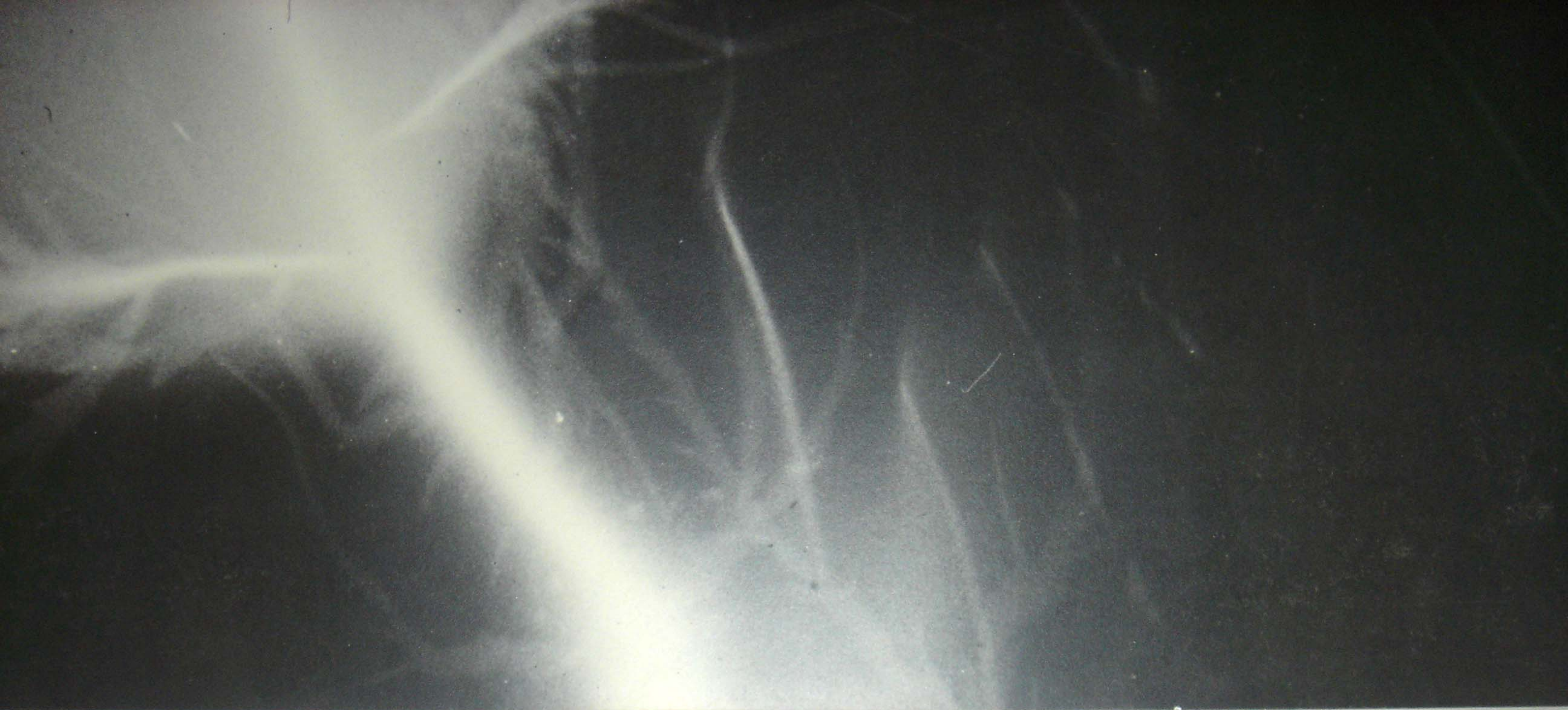
No. 20.

THE ELECTRIC COMET.

(Enlarged)

The Positive and Negative phase of Electric energy of high Potential as always united when in action. The Electric energy always moves in the direction indicated by the pointed ends of the Filamentary branches. (From 1894 Secondary Series.)



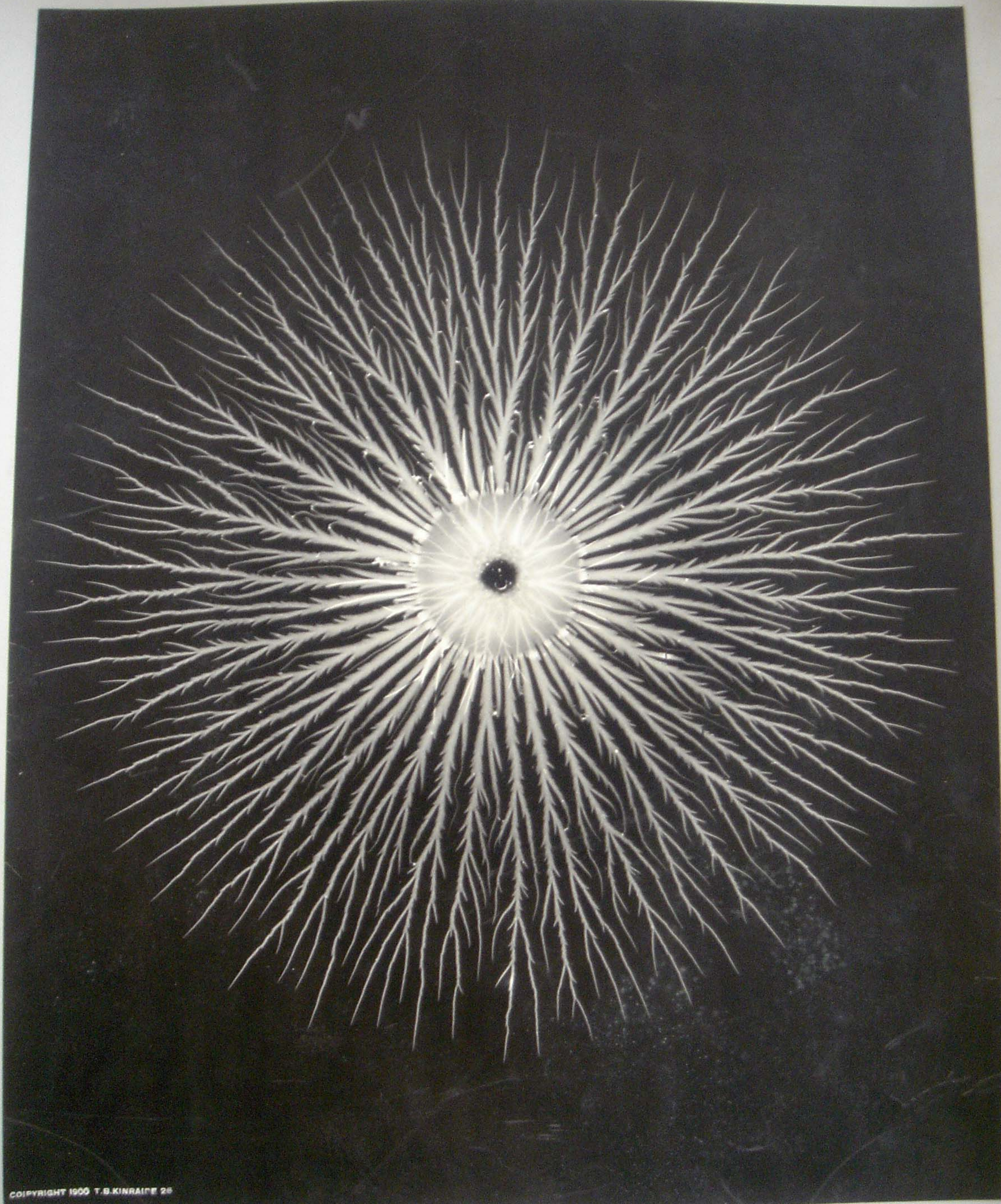


No. 20.

THE ELECTRIC COMET.

(Enlarged)

The Positive and Negative phase of Electric energy of high Potential as always united when in action. The Electric energy always moves in the direction indicated by the pointed ends of the Filiciform branches. *Short Wire Secondary Series.*



COPYRIGHT 1900 T.B.KINRAID 26

No. 26.

ANODOS.

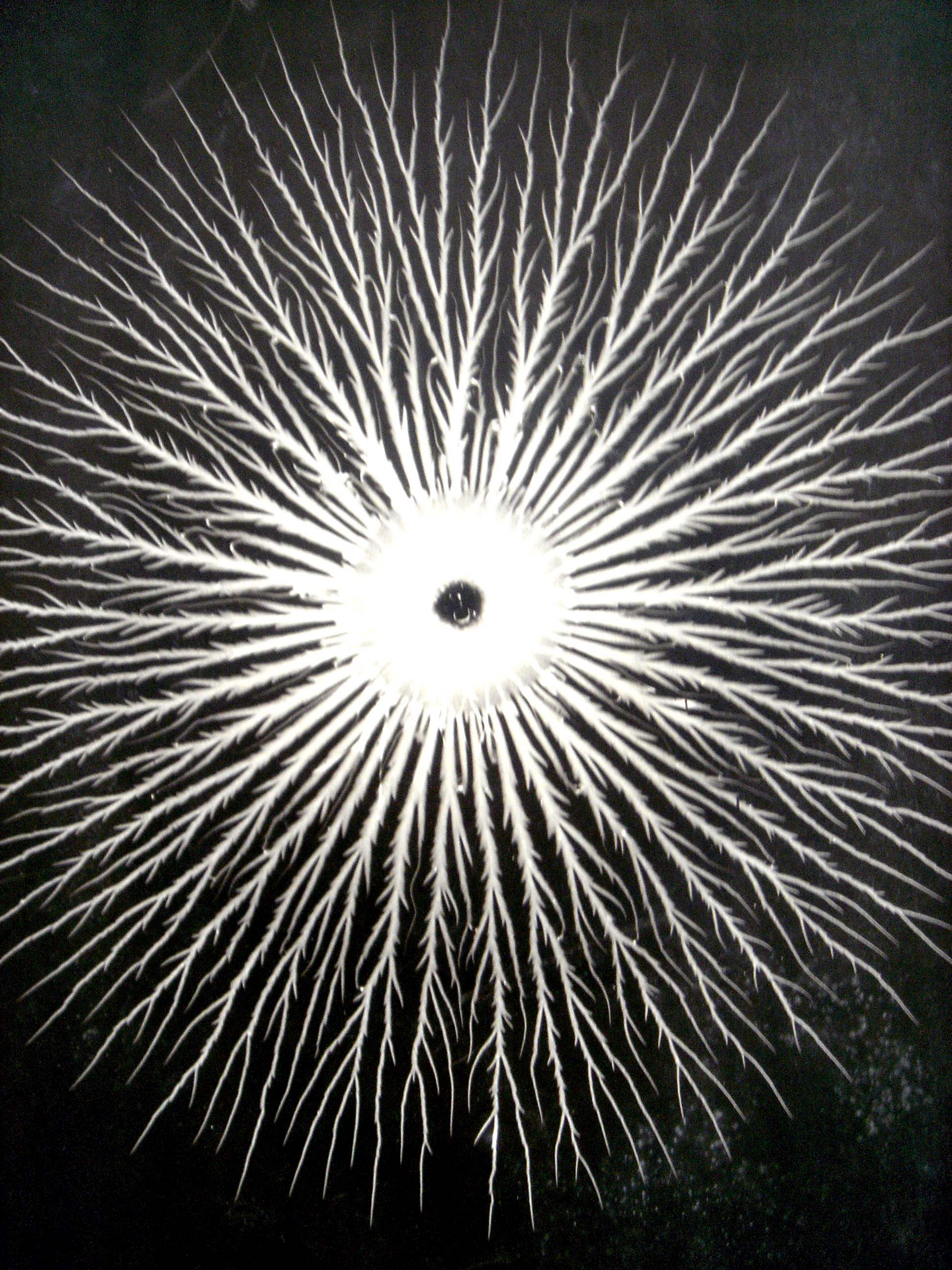
Companion to No. 37.

Law of the Positive Phase of Electricity.

When Electricity changes from a centre of localization to a condition of diffusion it passes through its Positive Phase.

A discharge of Electricity over the Negative surface of a condenser from a two inch sphere connected to the Positive surface.

Condenser Series.



No. 26.

ANODOS.

Companion to No. 37.

Law of the Positive Phase of Electricity.

When Electricity changes from a centre of focalization to a condition of diffusion it passes through its Positive Phase.

A discharge of Electricity over the Negative surface of a condenser *from* a two inch sphere connected to the Positive surface.

Condenser Series.









No. 8.

NEGATIVE PHASE OF ELECTRICITY.

(Not Enlarged)

The Plumous.

Companion to No. 12.

The Photograph plate was placed upon a glass plate having on its under side a strip of tinfoil extending vertically from the middle of the horizontal bar on the photograph. The Positive terminal was connected to the tinfoil; the Negative to a metallic rod which was placed upon the photograph film.

Long Wire Secondary. Condenser Series.



COPYRIGHT 1919 BY T.B. KINRAIDE. NO. 5

No. 5.

High Potential Oscillation of Positive and Negative Electricity.

Showing the Electric Comets.

The radiating streamers are the most graphic proof of the out-reaching character of the Positive phase of Electric energy. The busy lines are the paths of the Negative oscillation.

(Not Enlarged)

Wm. B. E. Kinraide, N.Y.C.



KINRAIDE. NO 5

No. 5.

(Not Enlarged)

High Potential Oscillation of Positive and Negative Electricity,

Showing the Electric Comets.

The radiating filaments are the most graphic portrayal of the out-reaching characteristic of the Positive phase of Electric energy. The heavy lines are the paths of the Negative oscillation.

Short Wire Secondary Series.



No. 17.

PRIMARY ENTITIES OF ELECTRICITY.

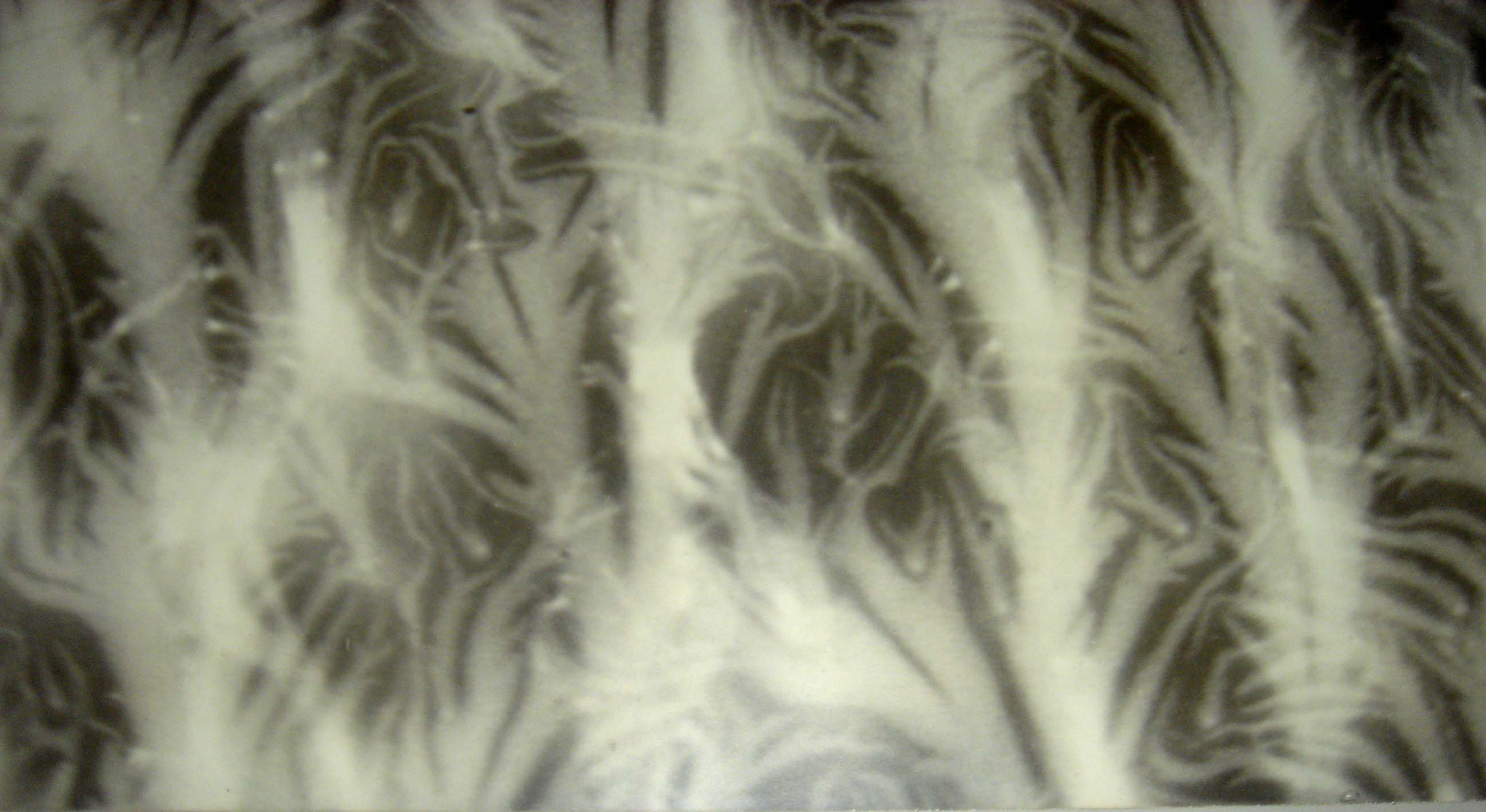
(Enlarged)

Discharge of Electricity by the passage of a metallic roller over a photograph plate laid flat down upon a positively charged insulated condenser surface. The phenomena of the two phases of Electricity in series between condenser surfaces.

Enlarged 100x

Grange for No. 2

EXP.
1207



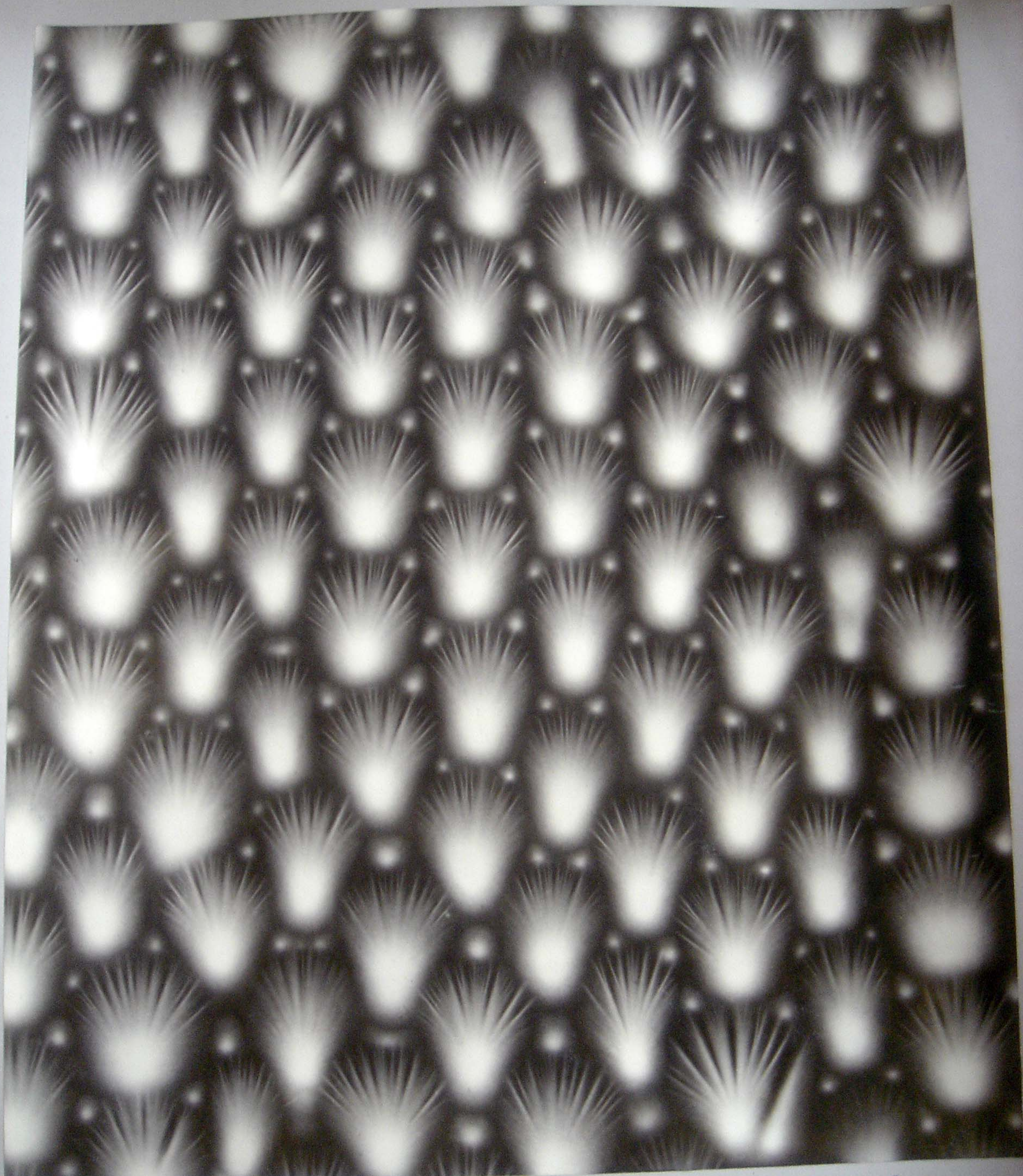
No. 17.

PRIMARY ENTITIES OF ELECTRICITY.

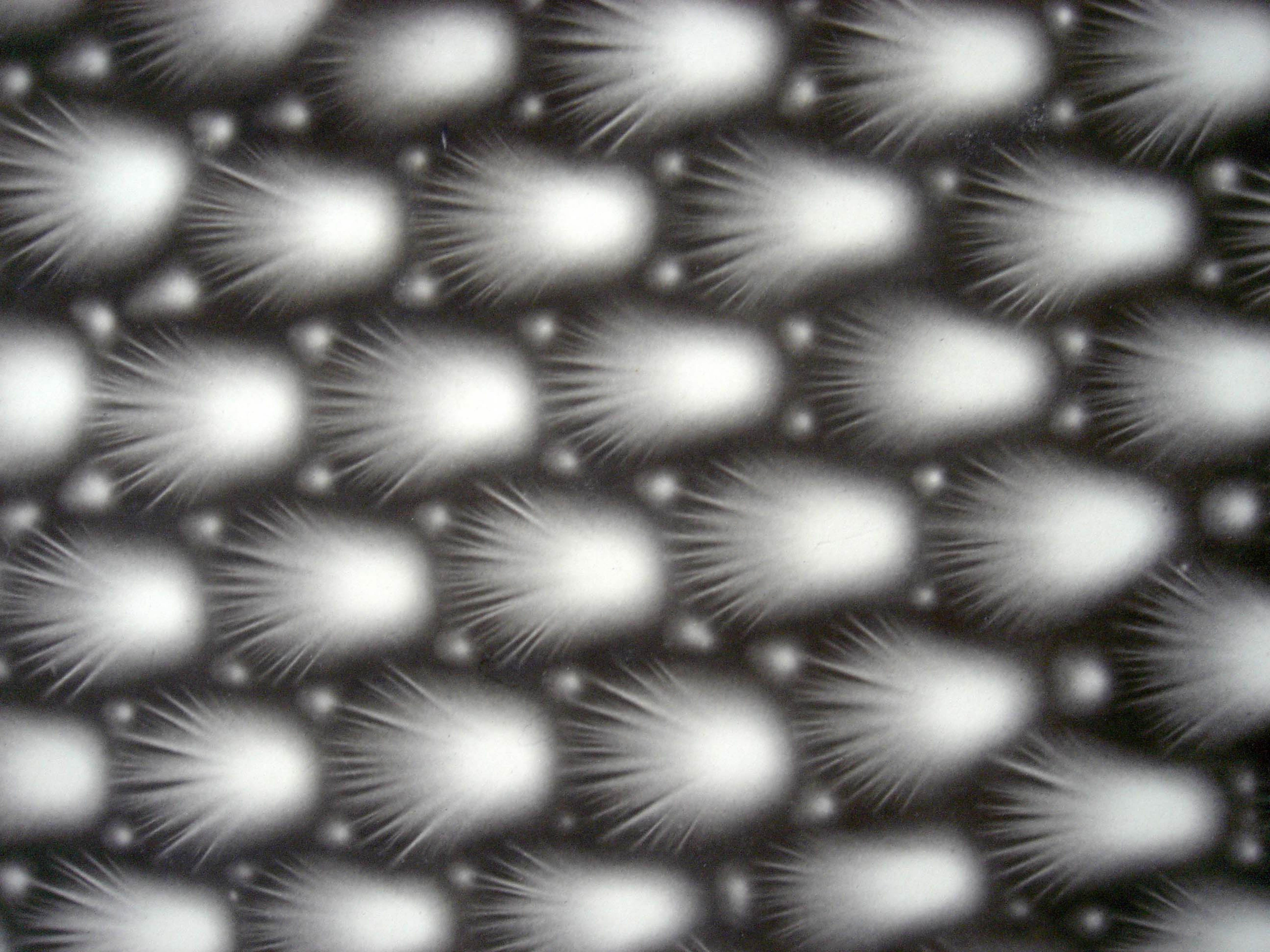
(Enlarged)

Discharge of Electricity by the passage of a metallic roller over a photograph plate laid film side down upon a positively charged uncoated condenser surface. The phenomena of the two phases of Electricity in series between condenser surfaces.

Condenser Series.



Enlarged.





COPYRIGHT 1900 BY T. S. KINRAIDE. NO 12

No. 12.

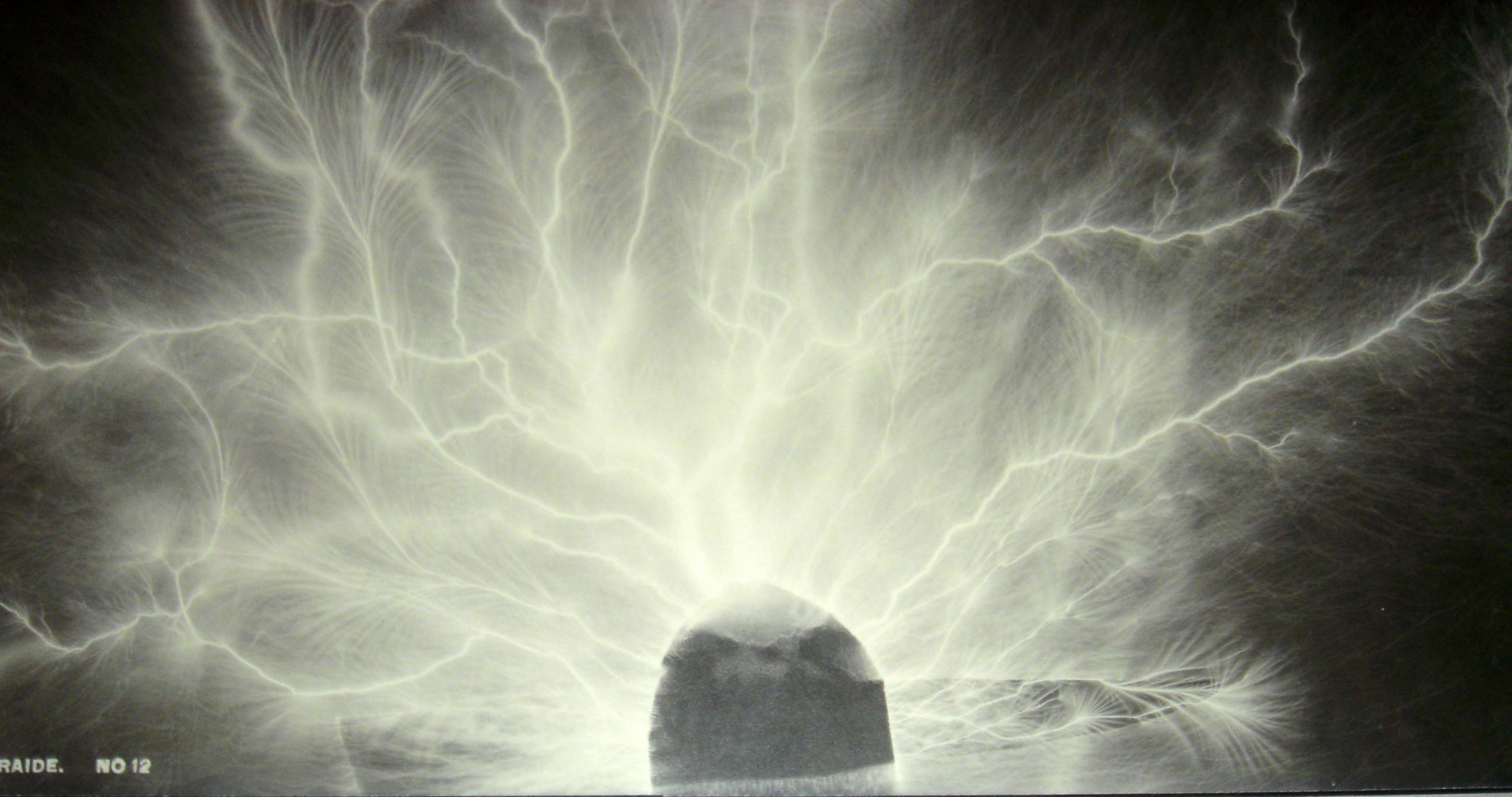
POSITIVE ELECTRIC PLUME.

(Not Enlarged)

The photograph plate was placed upon a glass plate, having a strip of tin-foil on its under side, extending vertically from the lower edge of the photograph plate. The negative terminal was connected to the tin-foil, the Positive to a piece of metal on the lower margin of the photograph plate.

Condenser Action.





No. 12.

POSITIVE ELECTRIC PLUME.

(Not Enlarged)

The photograph plate was placed upon a glass plate, having a strip of tinfoil on its under side, extending vertically from the lower edge of the photograph plate. The Negative terminal was connected to the tinfoil, the Positive to a piece of metal on the lower margin of the photograph plate.

Condenser Series.

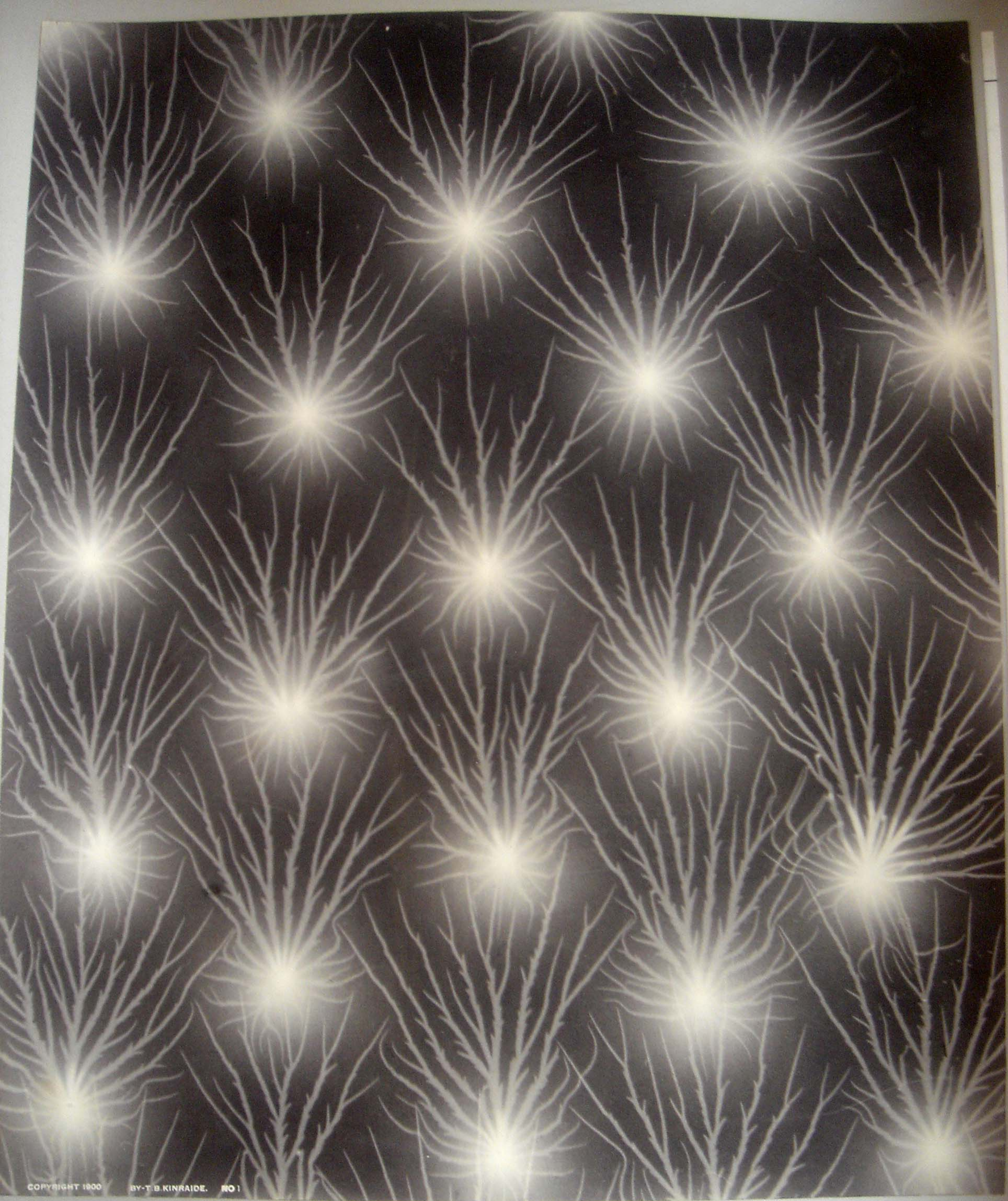
RAIDE. NO 15

No. 15. SURFACE DIFFUSION OF ELECTRICITY, Negative Phase. (Enlarged)

Companion to No. 13.

Discharge of Electricity from a small metallic rod in its passage near the film side of a photograph plate placed upon the uncoated positive surface of a charged condenser.

Condenser Series.



COPYRIGHT 1900

BY T. B. KINRAIDE. NO 1

No. 1. SURFACE DIFFUSION OF ELECTRICITY, Positive Phase. (Enlarged)

Companion to No. 10.

Discharge of Electricity from a metallic roller in its passage over the film side of a photograph plate placed upon the uncoated Negative surface of a charged condenser.

Condenser Series.



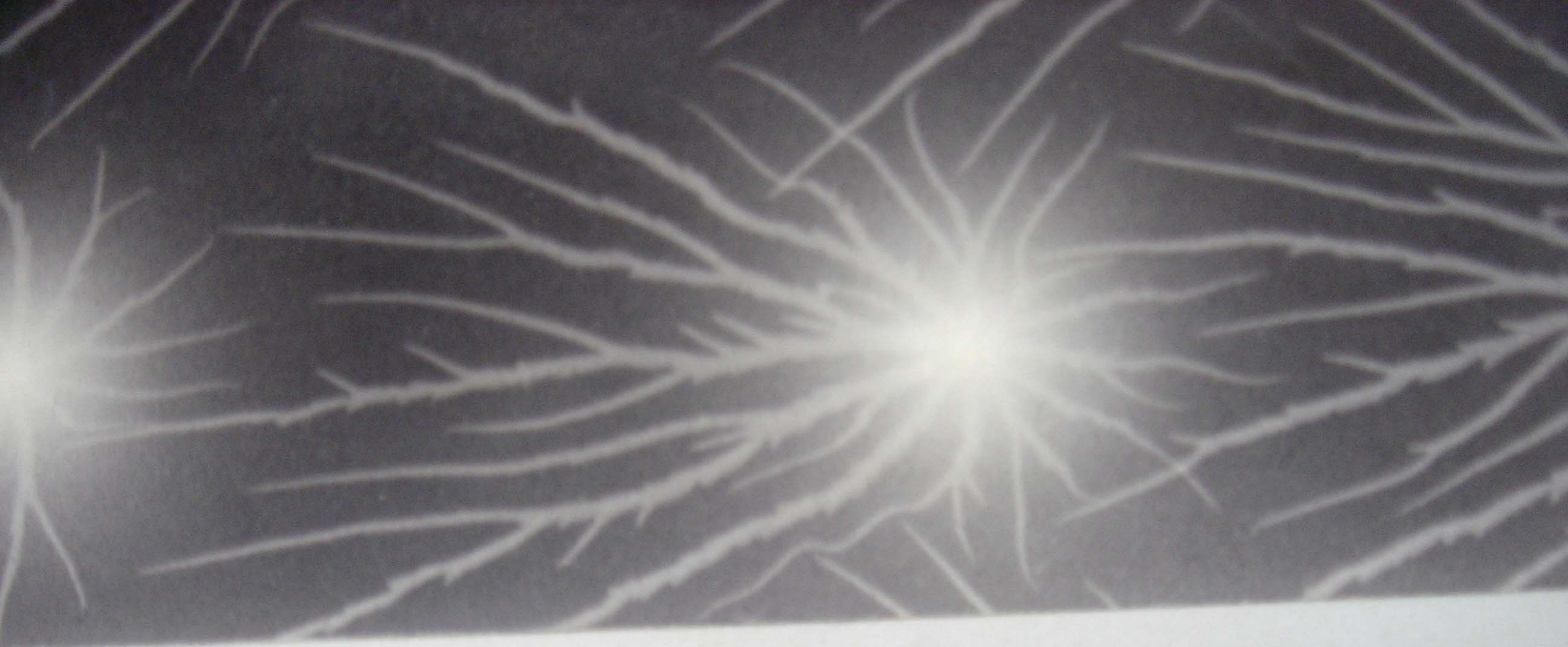
NRAIDE. NO 1

No. 1. SURFACE DIFFUSION OF ELECTRICITY, Positive Phase. (Enlarged)

Companion to No. 10.

Discharge of Electricity from a metallic roller in its passage over the film side of a photograph plate placed upon the uncoated Negative surface of a charged condenser.

Condenser Series.



	Grange for No. 1	EXP. 1207
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COPYRIGHT 1900 BY T. B. KINRAIDE. NO 16

No. 16.

POSITIVE PHASE OF ELECTRICITY.

(Enlarged)

Companion to No. 4.

Taken simultaneously with No. 4. Exhibiting the Positive phase of Electric energy. The terminals of a short wire secondary were placed on opposite sides of two photographic plates placed back to back.

Condenser Series.





Y-T.B.KINRAIDE. NO 16

No. 16.

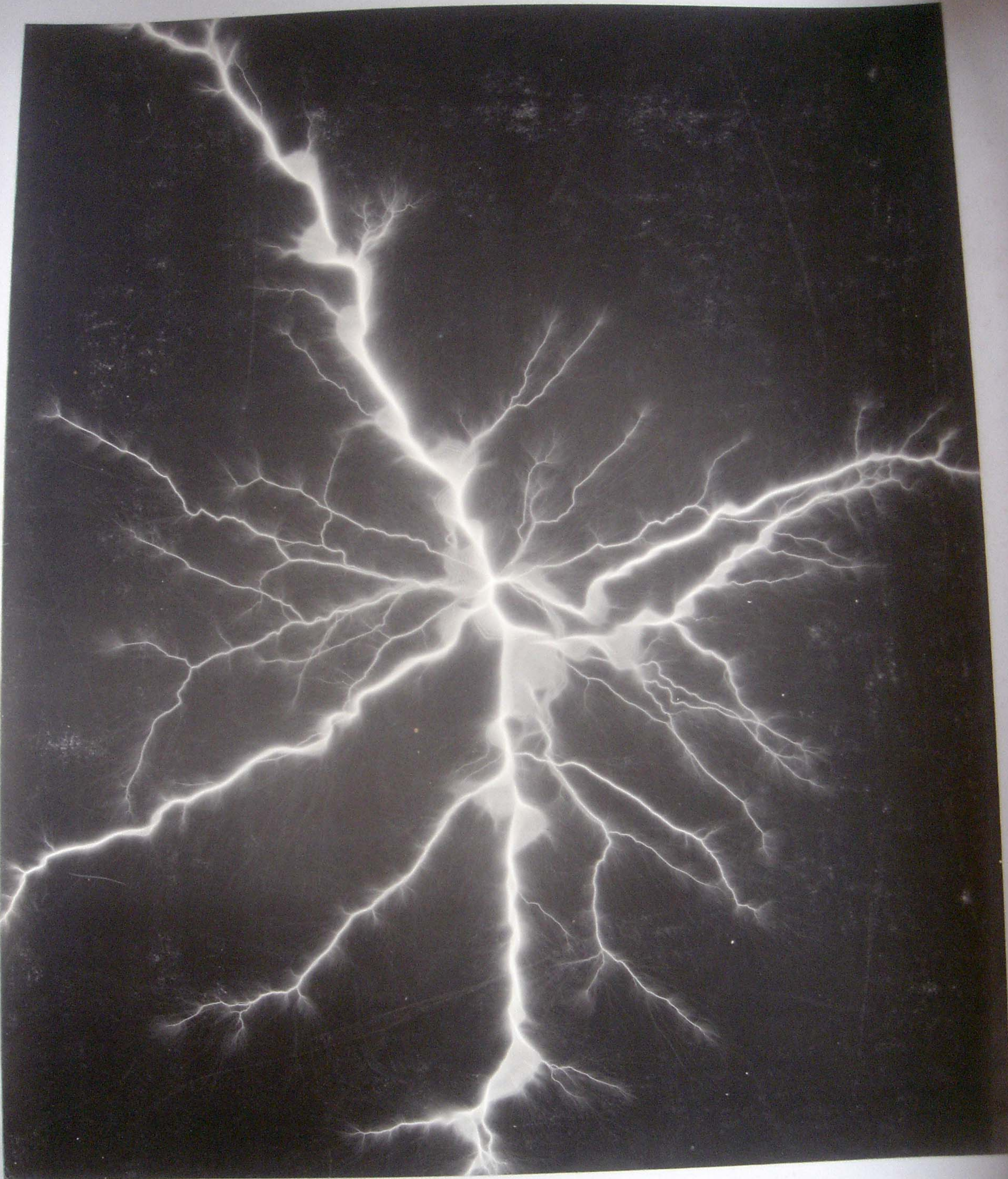
POSITIVE PHASE OF ELECTRICITY.

(Enlarged)

Companion to No. 4.

Taken simultaneously with No. 4. Exhibiting the Positive phase of Electric energy. The terminals of a short wire secondary were placed on opposite sides of two photographic plates placed back to back.

Condenser Series.



Copyrighted 1939, by Thomas B. Kinnaide.

No. 27.

STRIATED SPIRAL DISCHARGE.

(Not Enlarged)

A discharge from a metallic point upon a horizontally supported photograph plate. Transformation from
5 Amperes, 110 Volts. *Short Wave Secondary Series.*



No. 27.

STRIATED SPIRAL DISCHARGE.

(Not Enlarged)

A discharge from a metallic point upon a horizontally supported photograph plate. Transformation from
5 Amperes, 110 Volts.

Short Wire Secondary Series.



Copyright 1911, by Thomas A. Edison

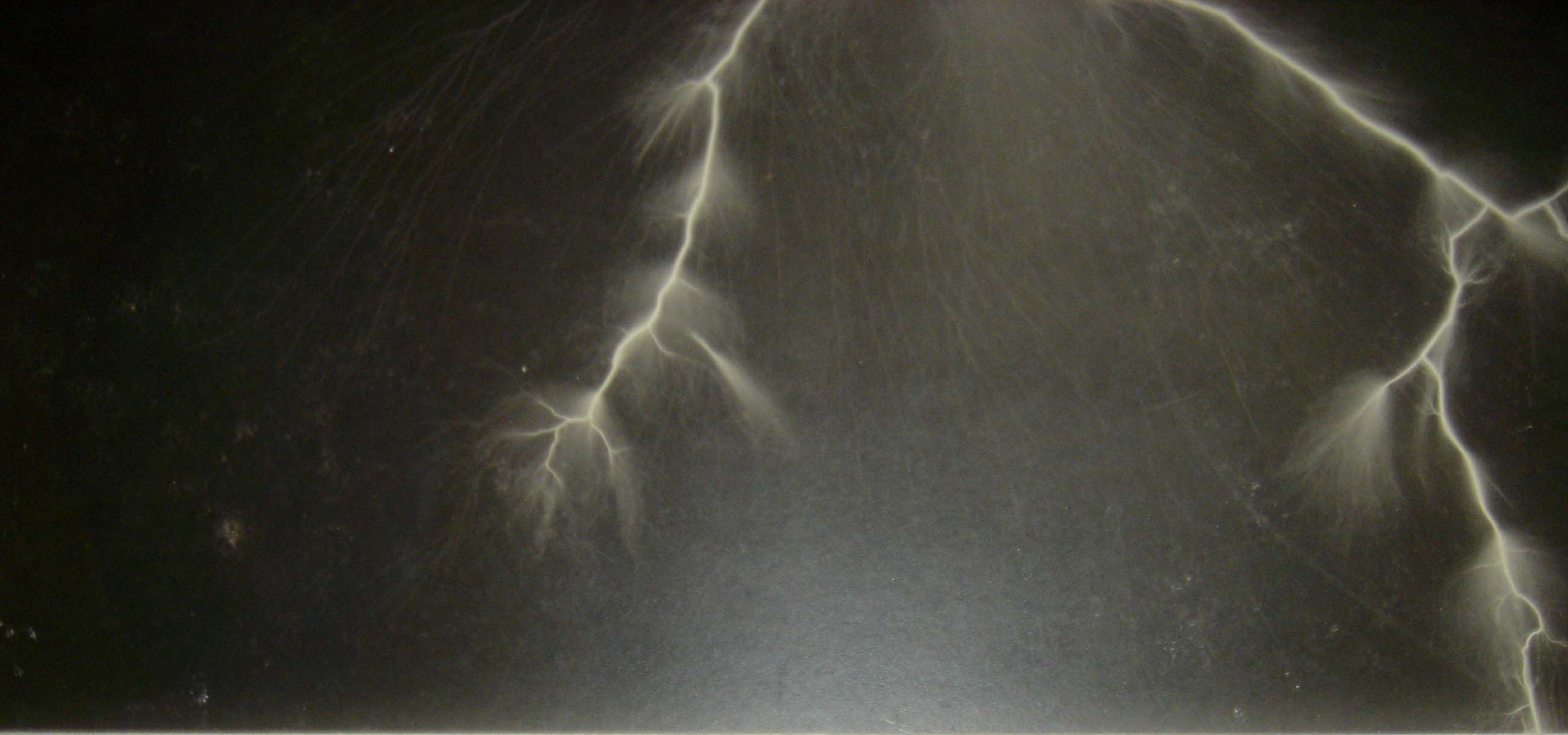
No. 22

ARBORESCENT SPRAY DISCHARGE.

(Not Enlarged)

An Oscillatory Electric Discharge of extremely high potential from a metallic point. The downy appearance along the heavy lines is the characteristic appearance of the Negative. The filaments are the filiform Positive. Transformed from an Edison's Magazine.

Edison's Magazine Series.



No. 29.

ARBORESCENT SPRAY DISCHARGE.

(Not Enlarged)

An Oscillatory Electric Discharge of extremely high potential from a metallic point. The downy appearance along the heavy lines is the characteristic appearance of the Negative. The filaments are the filiciform Positive. Transformed from 20 Volts, 7 Amperes.

Short Wire Secondary Series.





B. Kinraide.

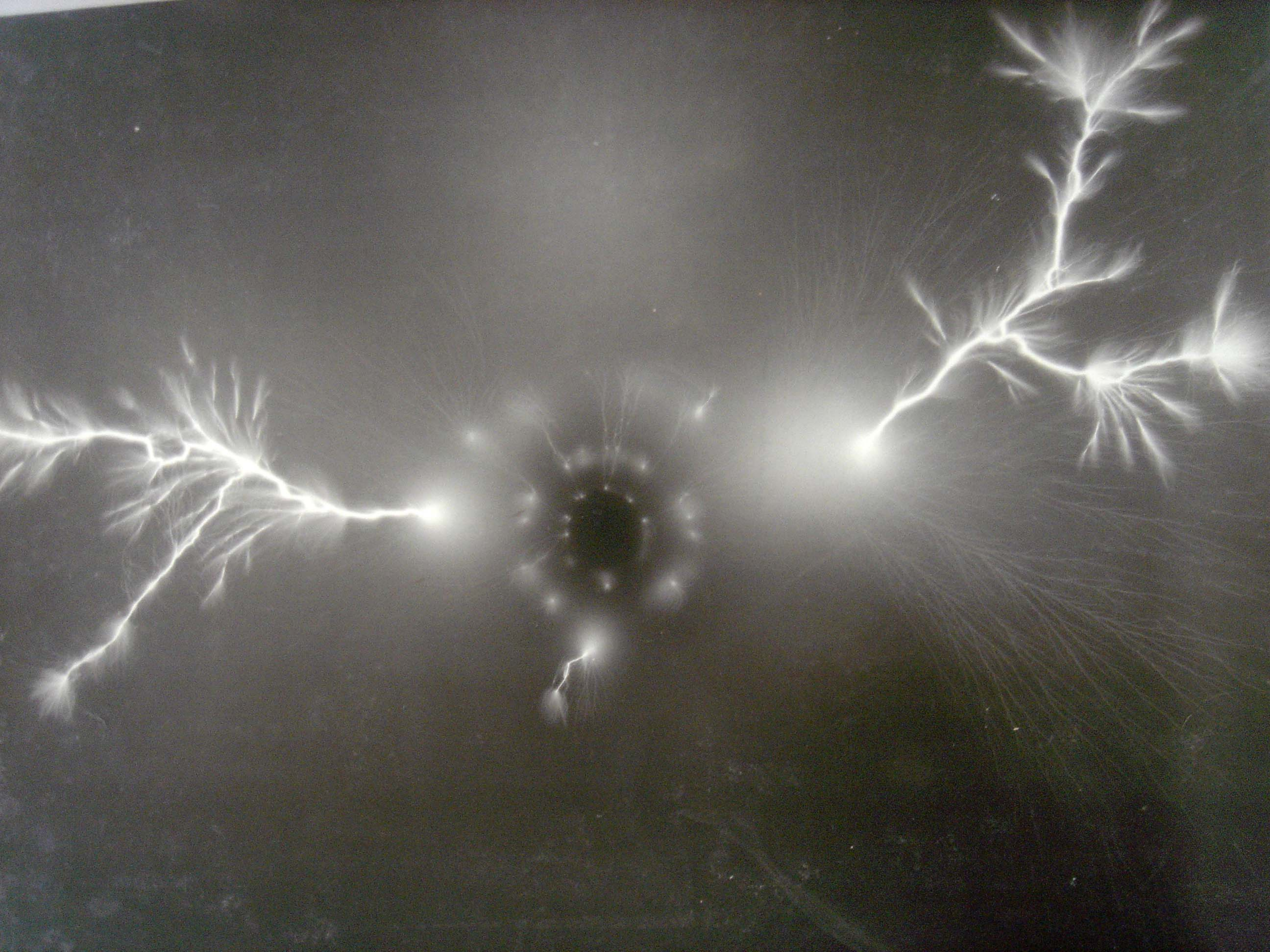
No. 31

ARBORESCENT ELECTRICITY.

(Not Enlarged)

An Oscillatory Electric discharge of extremely high potential from a metallic point. The downy appearance along the heavy lines is the characteristic appearance of the Negative. The Filaments are the Filiciform or Positive. Transformed from 20 Volts, 15 Amperes.

Short Wire Secondary Series.





No. 32.

NEGATIVE PHASE OF ELECTRICITY.

(Not Enlarged)

Taken immediately after No. 2. The current from the generator reversed other conditions precisely the same as when plate No. 2 was taken. A few of the positive filaments are present owing to an oscillation of the discharge.

Short Wire Secondary Series.

COPYRIGHT 1900

BY T. B. KINRAIDE, NO. 3.

No. 35.

THE ENTITY OF ELECTRICITY.

(Enlarged)

The embodiment of the triple Phase of Electricity. An autographic record of a developing entity of energy. Its Fixation or negative phase; its dynamic or magnetic phase; its diffusion or Positive phase.

The withdrawal of electricity from a portion of a charged condenser surface produces a negative condition relative to the rest of the surface. The Electric force in its change from the Positive to the Negative condition causes the development of the Electric entity. The Negative phase of the entity has its origin and end on the Positive, whilst the Positive phase begins and ends in the negative condition of the plate's surface. The dynamic or magnetic unites the two opposite phases.

condenser. Arrows.

T.B. KINRAIDE. NO. 35.

No. 35.

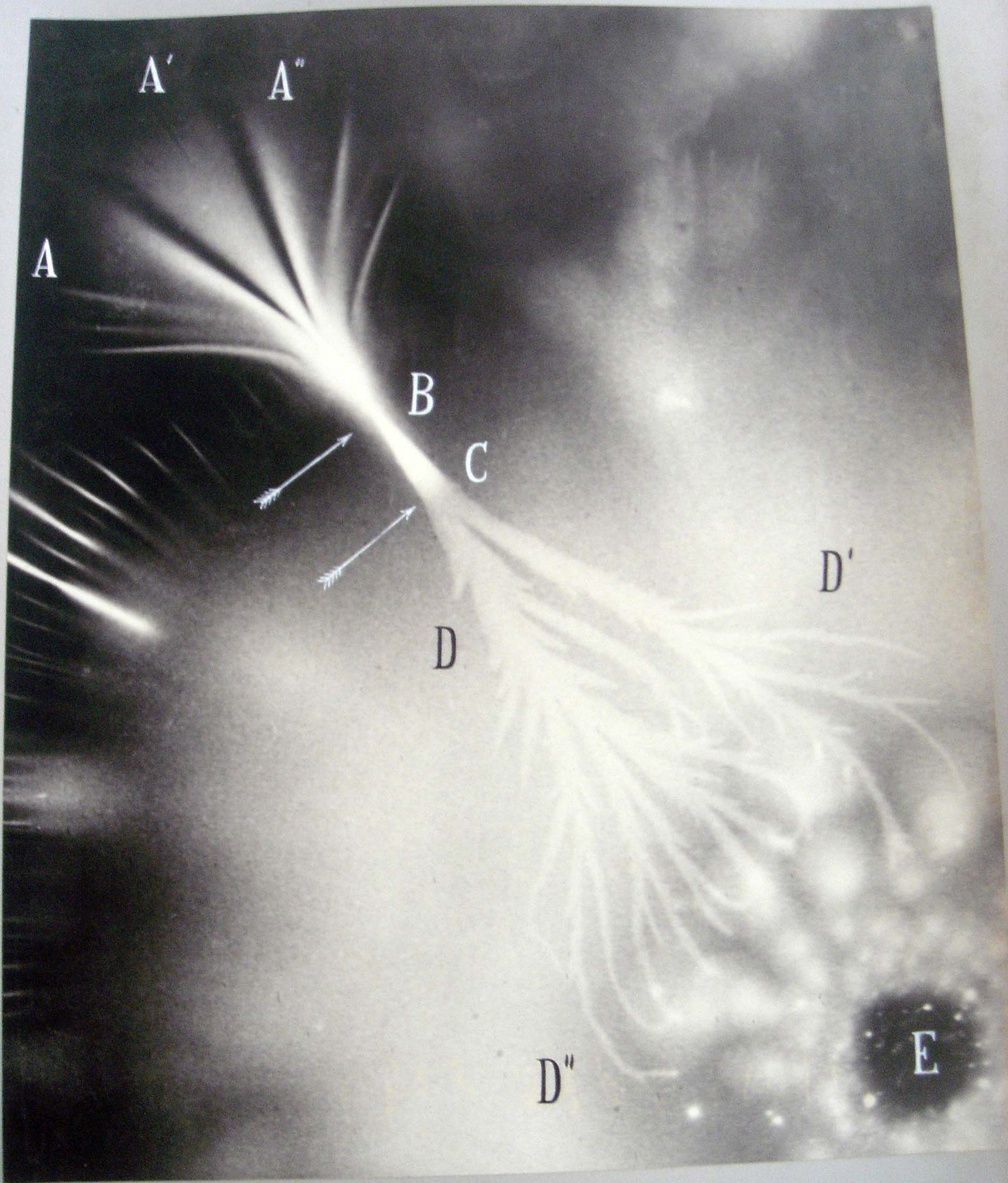
THE ENTITY OF ELECTRICITY.

(Enlarged)

The embodiment of the triple Phase of Electricity. An autographic record of a developing entity of energy. Its Focalization or negative phase; its dynamic or magnetic phase; its diffusion or Positive phase.

The withdrawal of electricity from a portion of a charged condenser surface produces a negative condition relative to the rest of the surface. The Electric force in its change from the Positive to the Negative condition causes the developement of the Electric entity. The Negative phase of the entity has its origin and end on the Positive, whilst the Positive phase begins and ends in the negative condition of the plate's surface. The dynamic or magnetic unites the two opposites phases.

Condenser Series.

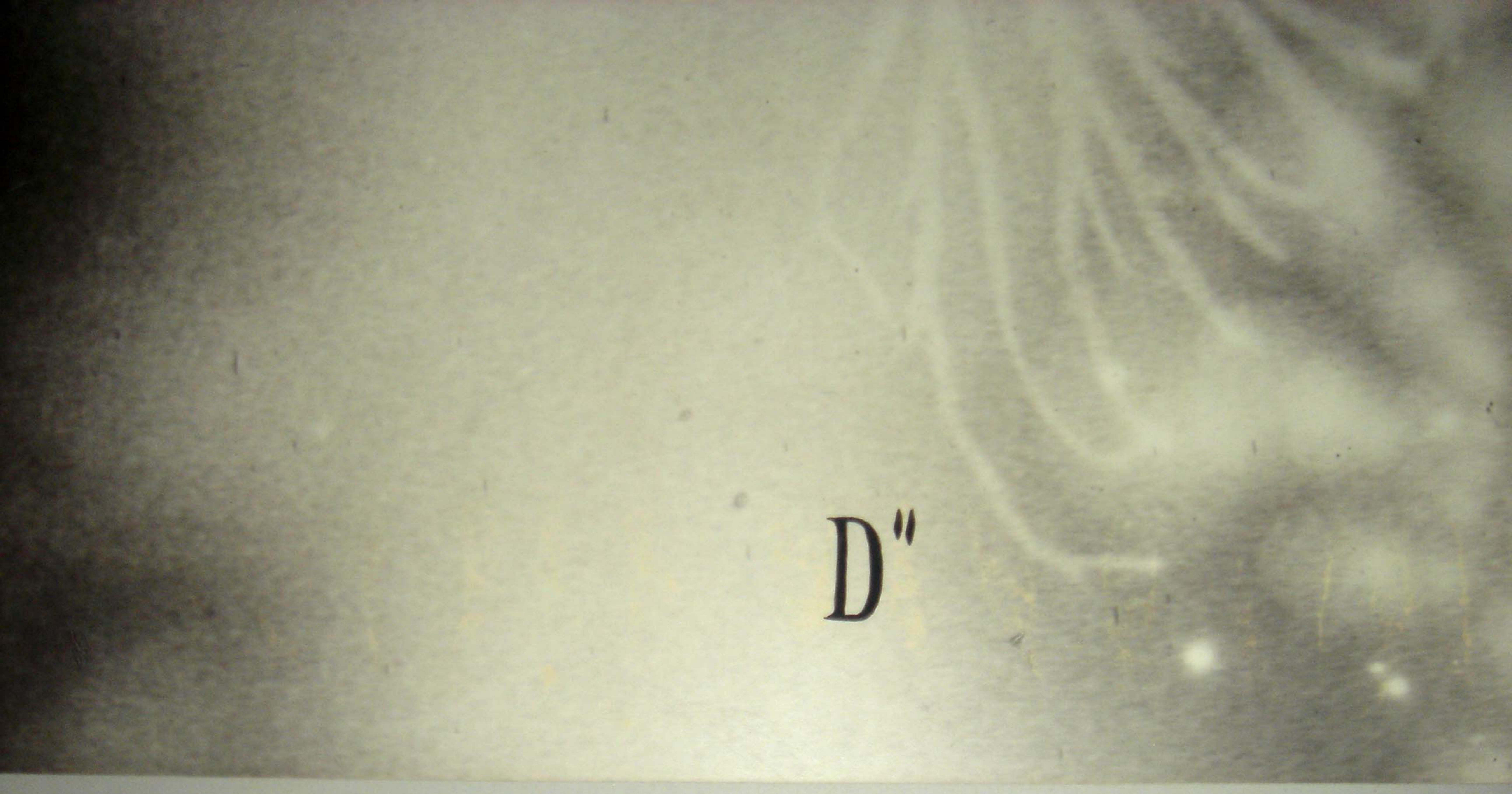


No. 36.

THE ENTITY OF ELECTRICITY.

(Enlarged)

The embodiment of the triple Phase of Electricity. An autographic record of a developing entity of energy. Its Positioning or negative phase; its dynamic or magnetic phase; its diffusion or Positive phase.
 The withdrawal of electricity from a portion of a charged condenser surface produces a negative condition relative to the rest of the surface. The Electric force is its change from the Positive or the Negative condition causes the development of the Electric entity. The Negative phase of the entity has its origin and end on the Positive, whilst the Positive phase begins and ends in the negative condition of the plate's surface. The dynamic or magnetic causes the two opposite phases.



D''

No. 36.

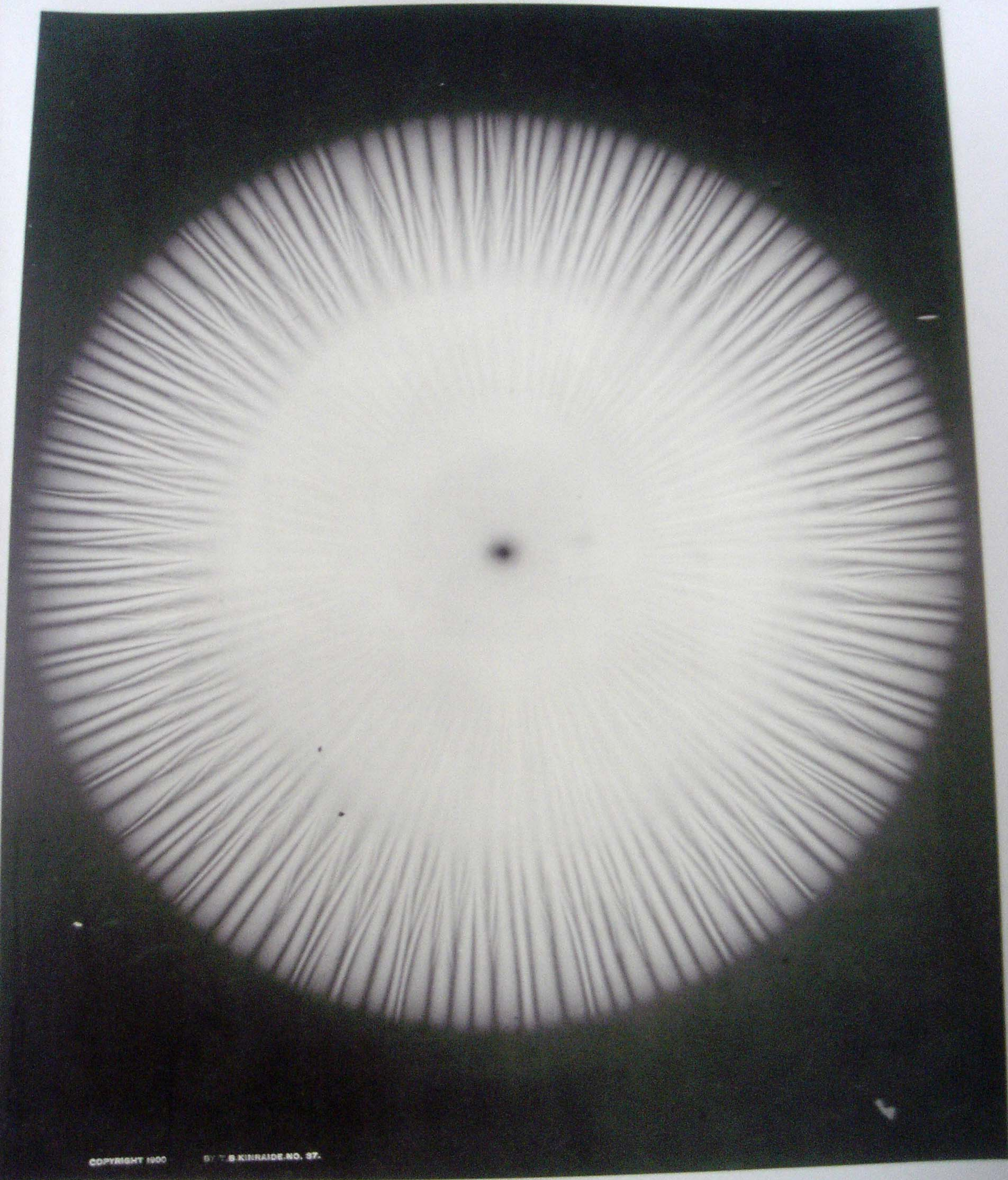
THE ENTITY OF ELECTRICITY.

(Enlarged)

The embodiment of the triple Phase of Electricity. An autographic record of a developing entity of energy. Its Focalization or negative phase; its dynamic or magnetic phase; its diffusion or Positive phase.

The withdrawal of electricity from a portion of a charged condenser surface produces a negative condition relative to the rest of the surface. The Electric force in its change from the Positive to the Negative condition causes the developement of the Electric entity. The Negative phase of the entity has its origin and end on the Positive, whilst the Positive phase begins and ends in the negative condition of the plate's surface. The dynamic or magnetic unites the two opposites phases.

Condenser Series.



BY T.B.KINRAIDE.NO. 37.

No. 38.

ANODOS.

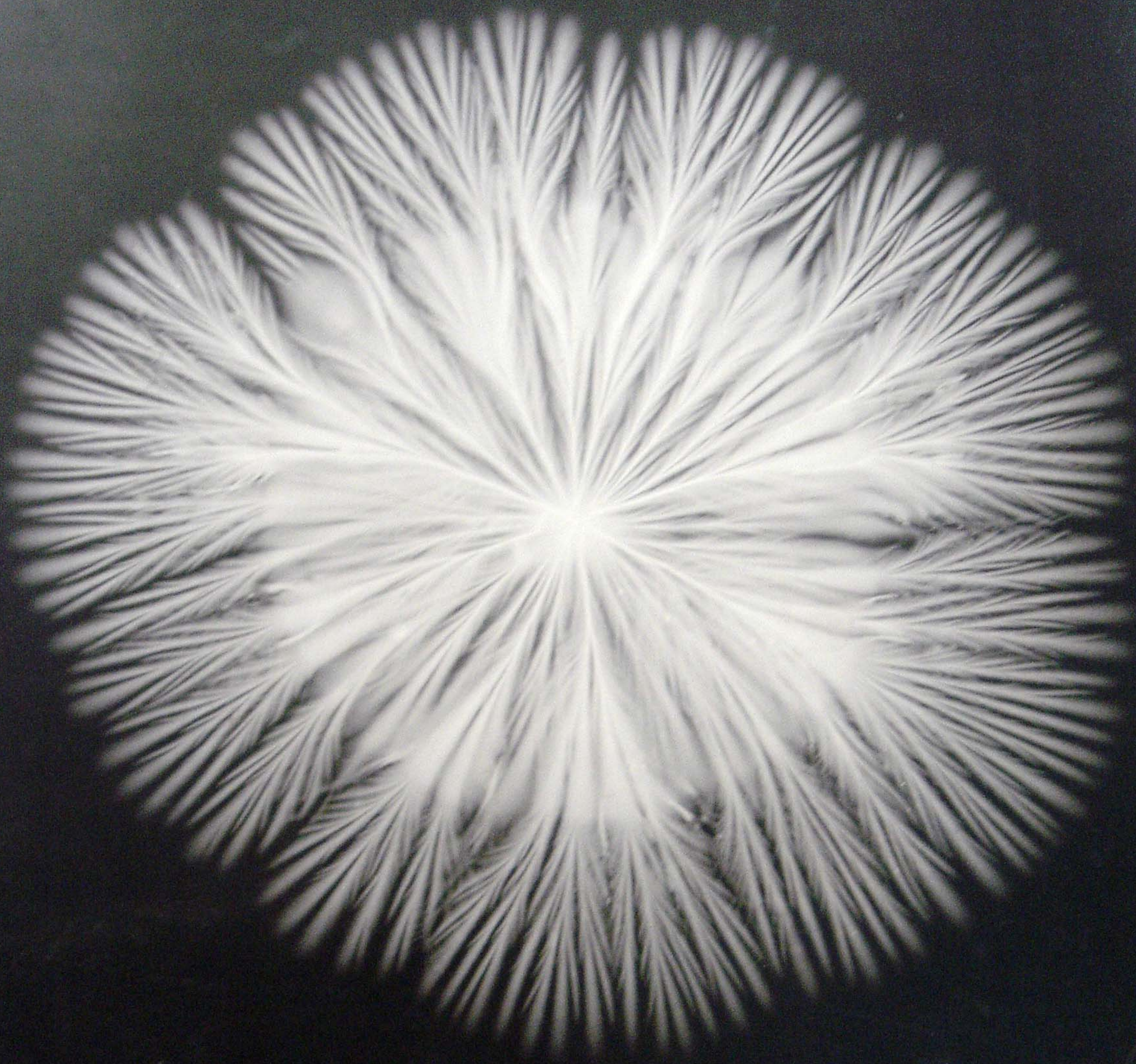
Companion to No. 37.

Law of the Positive Phase of Electricity.

When Electricity changes from a centre of focalization to a condition of diffusion it passes through its Positive Phase.

A discharge of Electricity over the Negative surface of a condenser *from* a two inch sphere connected to the Positive surface.

Condenser Series.



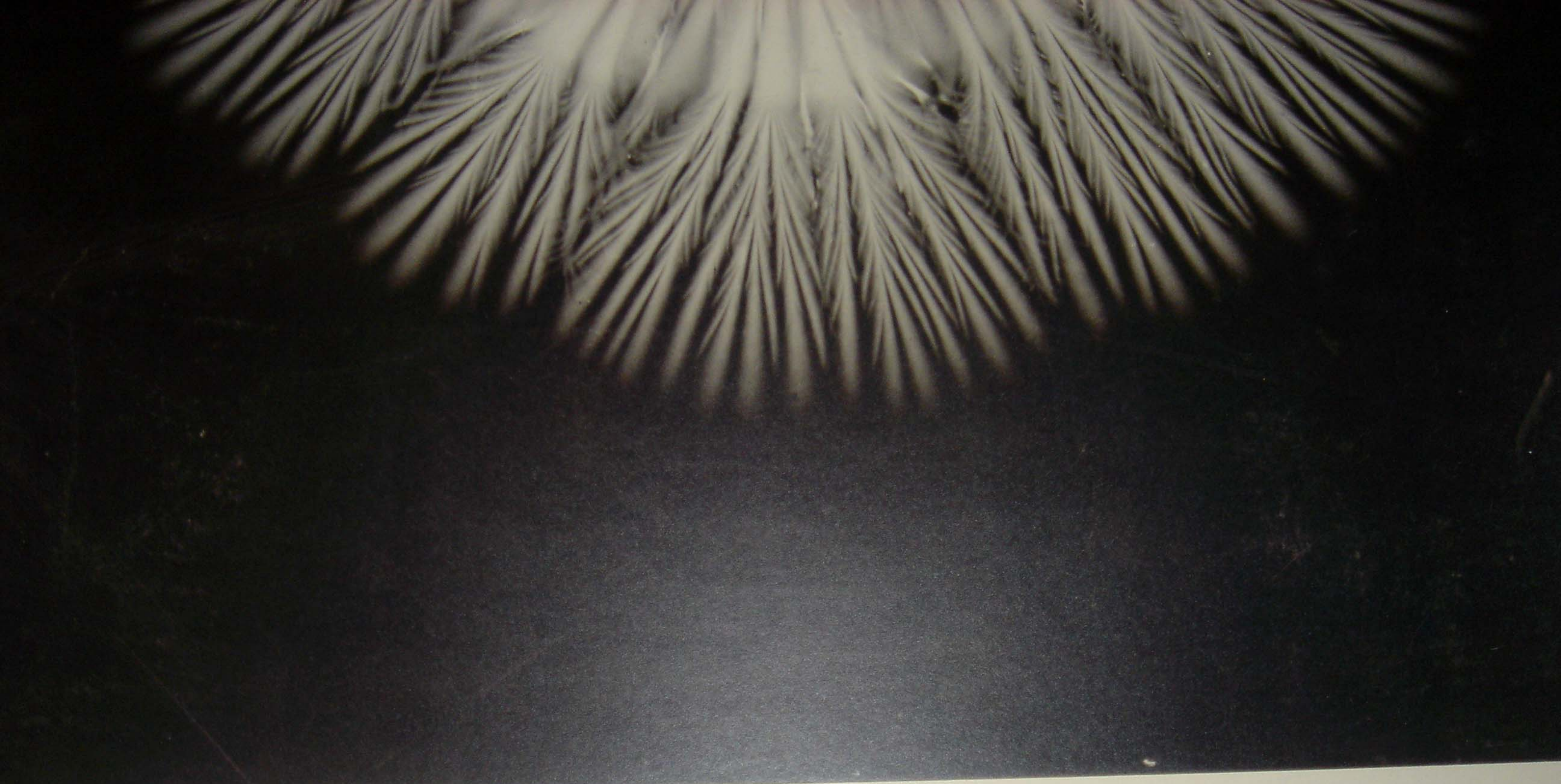
No. 65.

THE NEGATIVE PHASE OF ELECTRICITY.

Enlarged.

A discharge of Electricity over a curved conductor surface towards a two inch sphere placed upon the line side of a photograph plate.

London 1870.



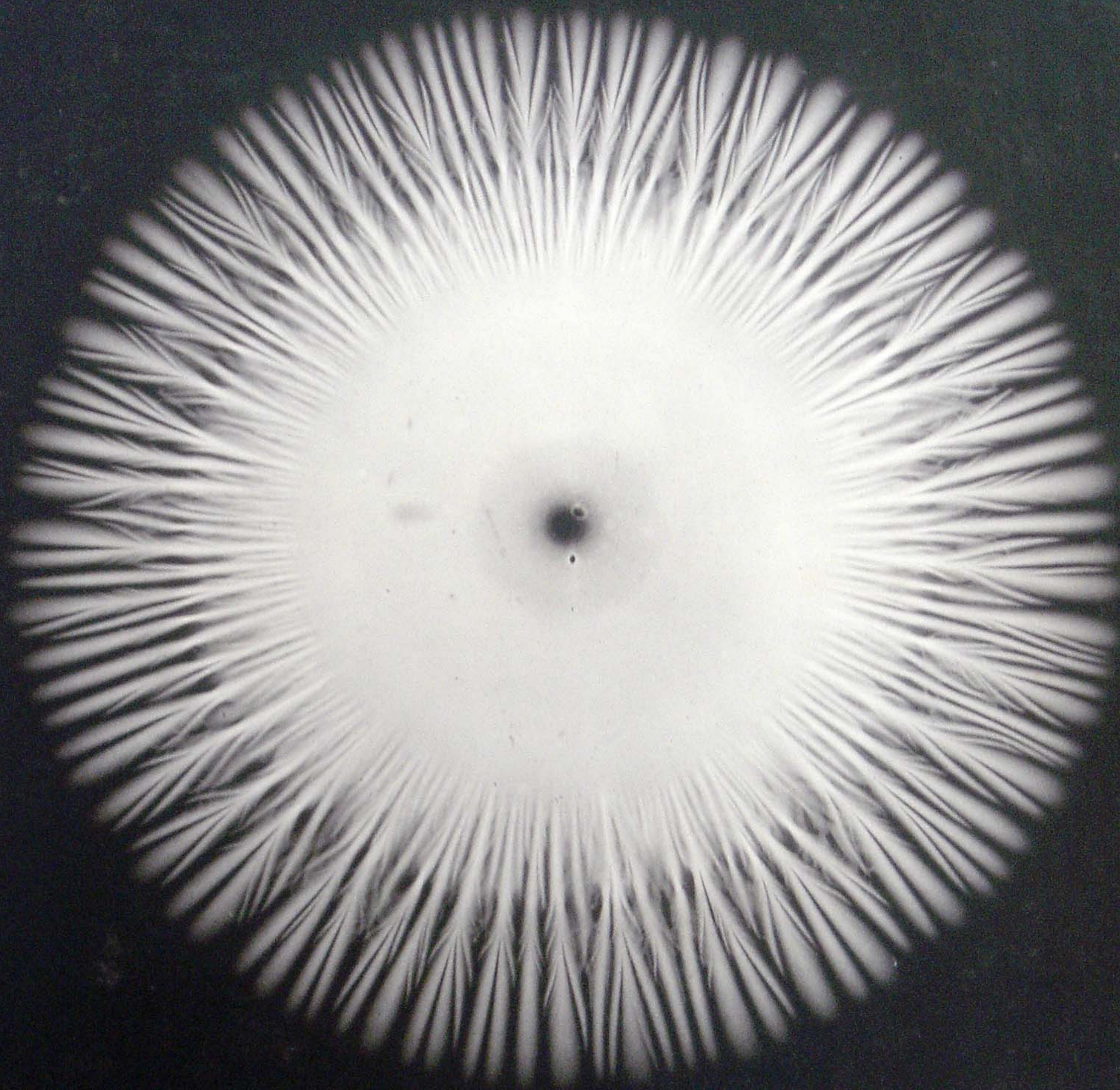
No. 40.

THE NEGATIVE PHASE OF ELECTRICITY.

(Enlarged)

A discharge of Electricity over a normal condenser surface towards a two inch sphere placed upon the film side of a photograph plate.

Condenser Series.



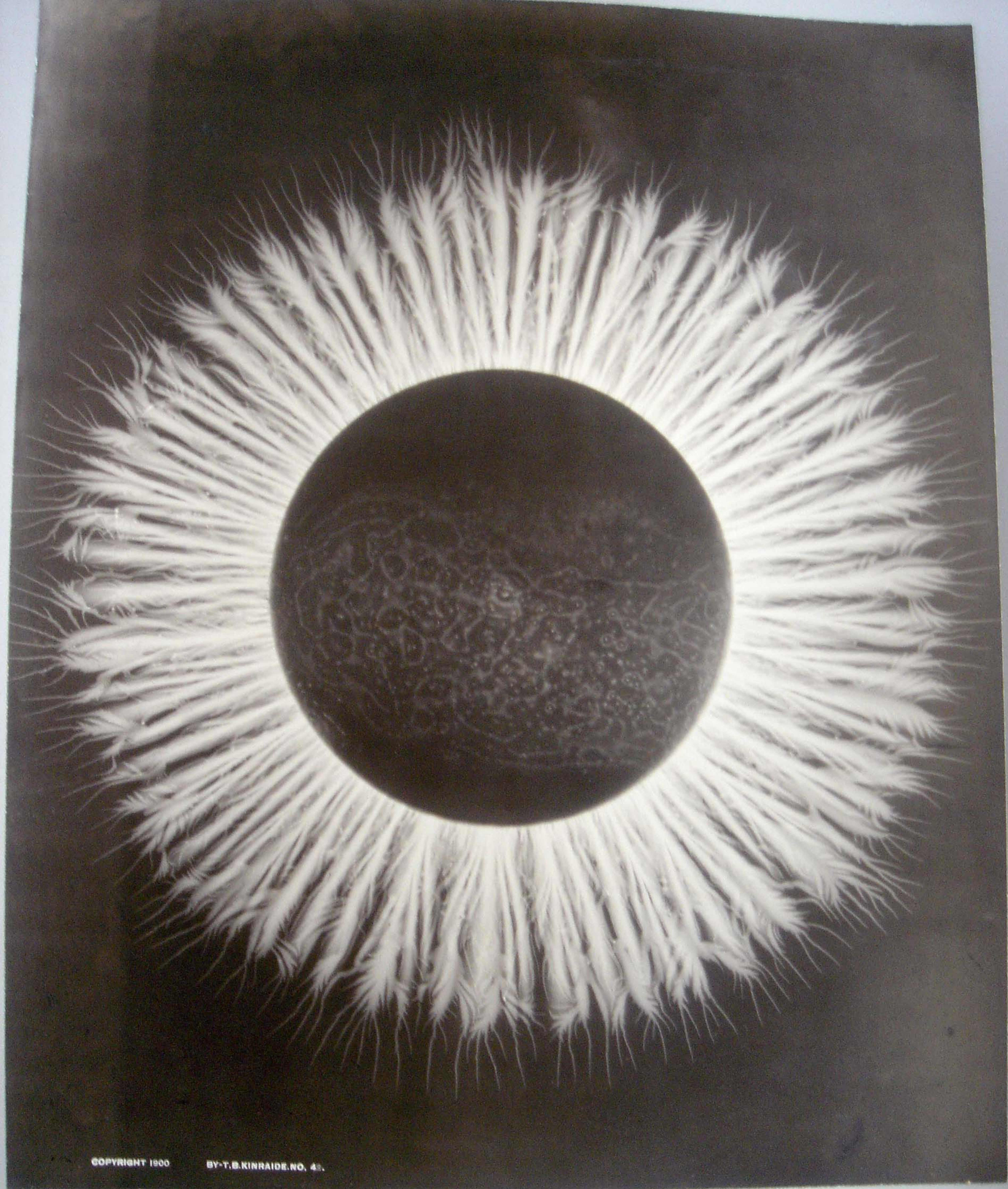
No. 41.

THE NEGATIVE PHASE OF ELECTRICITY.

A discharge of Electricity over a normal condenser surface towards a two inch sphere placed upon the film side of a photograph plate.

(Enlarged)

Condenser Series.



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BY-T. B. KINRAIDE. NO. 45.

No. 42.

Autograph of the Positive and Negative Phases of
Electricity.

(Enlarged)

A discharge of Electricity over a normal condenser surface towards the edge of a disk placed upon the film side of a photograph plate producing the Negative phase. The superimposed Positive phase resulted from the return discharge of the force back over the plate from the edge of the disk.

Unobscured Screen



BY-T.B.KINRAIDE.NO. 42.

No. 42.

Autograph of the Positive and Negative Phases of Electricity.

(Enlarged)

A discharge of Electricity over a normal condenser surface towards the edge of a disk placed upon the film side of a photograph plate producing the Negative phase. The superimposed Positive phase resulted from the return discharge of the force back over the plate from the edge of the disk.

Condenser Series.



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BY T. B. KINRAIDE, NO. 43.

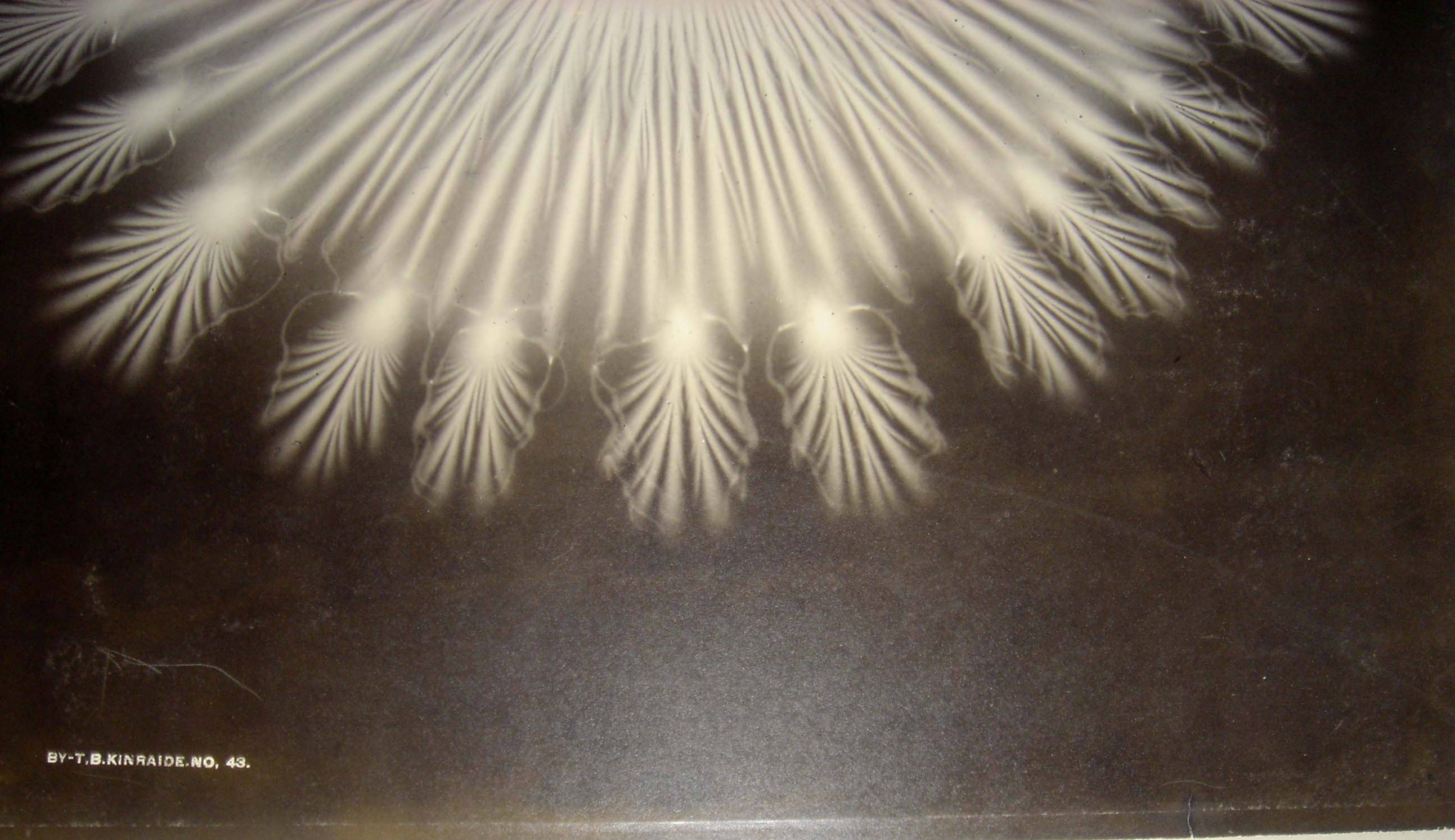
No. 43.

A Study of the Negative Phase of Electricity.

(Enlarged)

A discharge of Electricity from a normal condenser surface towards the pole of a sphere placed upon the film side of a photograph plate accompanied by a discharge towards the equator of the sphere.

Condenser Series.



BY-T.B.KINRAIDE.NO. 43.

No. 43.

A Study of the Negative Phase of Electricity.

(Enlarged)

A discharge of Electricity from a normal condenser surface towards the pole of a sphere placed upon the film side of a photograph plate accompanied by a discharge towards the equator of the sphere.

Condenser Series.



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BY T. B. KINRAIDE, NO. 44.

No. 44.

A STUDY OF THE NEGATIVE PHASE OF
ELECTRICITY.

(Enlarged)
Condenser Series.





COPYRIGHT 1900

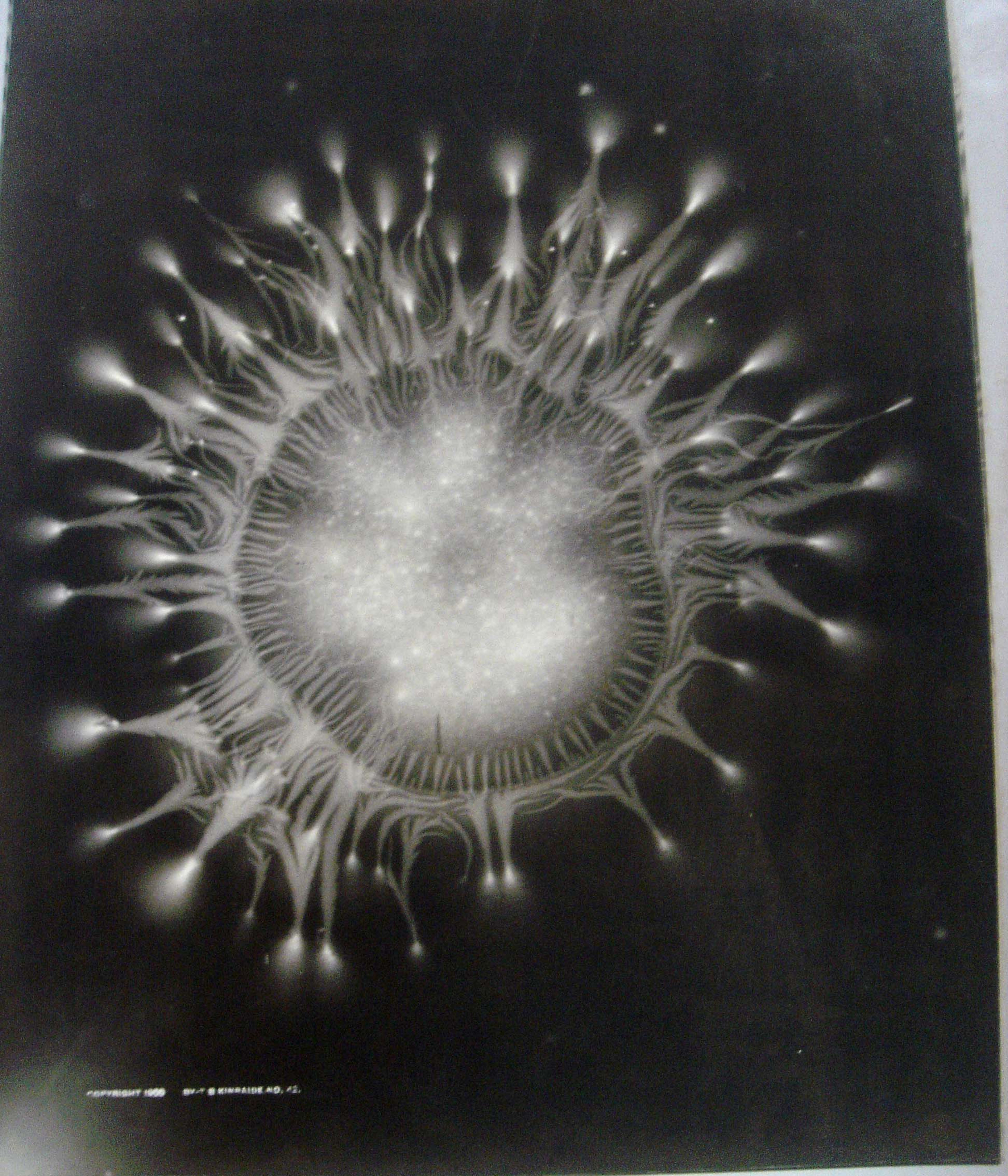
BY T. B. KIRKMAN, NO. 45.

No. 45.

A STUDY OF THE NEGATIVE PHASE OF
ELECTRICITY.

(Enlarged)

Copyright 1900.



COPYRIGHT 1906 BY T. S. KIRKLAND NO. 42.

No. 46.

PRIMARY ENTITIES OF ELECTRICITY.

(Enlarged)

See No. 14.

Discharge of Electricity through a ten inch sphere placed upon a photograph plate laid flat down upon a positively charged insulated condenser surface. The phenomena of the two phases of Electricity in series between condenser surfaces.

Condenser 20 in.



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BY-T.B.KINRAIDE.NO. 47.

No. 47.

PRIMARY ENTITIES OF ELECTRICITY.

(Enlarged)

See No. 14.

Discharge of Electricity through a two inch sphere placed upon a photograph plate laid film side down upon a positively charged uncoated condenser surface. The phenomena of the two phases of Electricity in series between condenser surfaces.

Condenser Series.



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BY T. B. KIRKALDIE, NO. 62.

No. 47.

PRIMARY ENTITIES OF ELECTRICITY.

(Enlarged)

See No. 14.
Discharge of Electricity through a two inch sphere placed upon a photograph plate laid film side down upon a positively charged uncoated condenser surface. The phenomena of the two phases of Electricity in series between condenser surfaces.
Condenser Surfaces.

BY-T.B.KINRAIDE.NO. 52.

No. 47.

PRIMARY ENTITIES OF ELECTRICITY.

(Enlarged)

See No. 14.

Discharge of Electricity through a two inch sphere placed upon a photograph plate laid film side down upon a positively charged uncoated condenser surface. The phenomena of the two phases of Electricity in series between condenser surfaces.

Condenser Series.



CONVENT 100 51 T. E. KRAIDEN, JR.

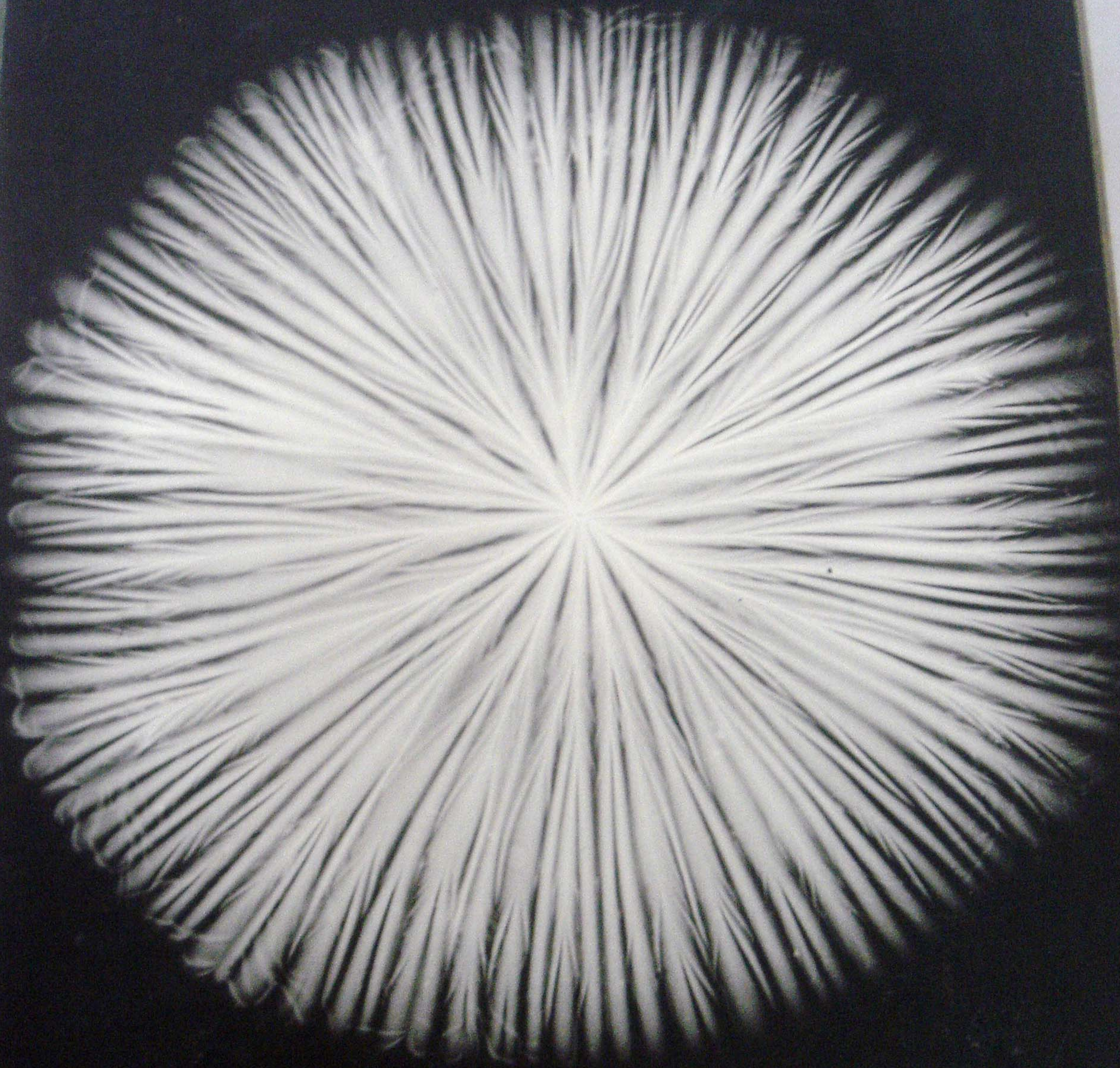
No. 48.

COMPLEX ELECTRIC ENTITIES.

(Enlarged)

Electric Entities obtained from a surface electrically divided into a Positive and Negative area. The Blaucous or Negative end of the Entity is formed on the Positive area. The Positive end forms on the Negative area. The narrow stem joining the two phases marks the line of division between the two areas.

Condenser Series.



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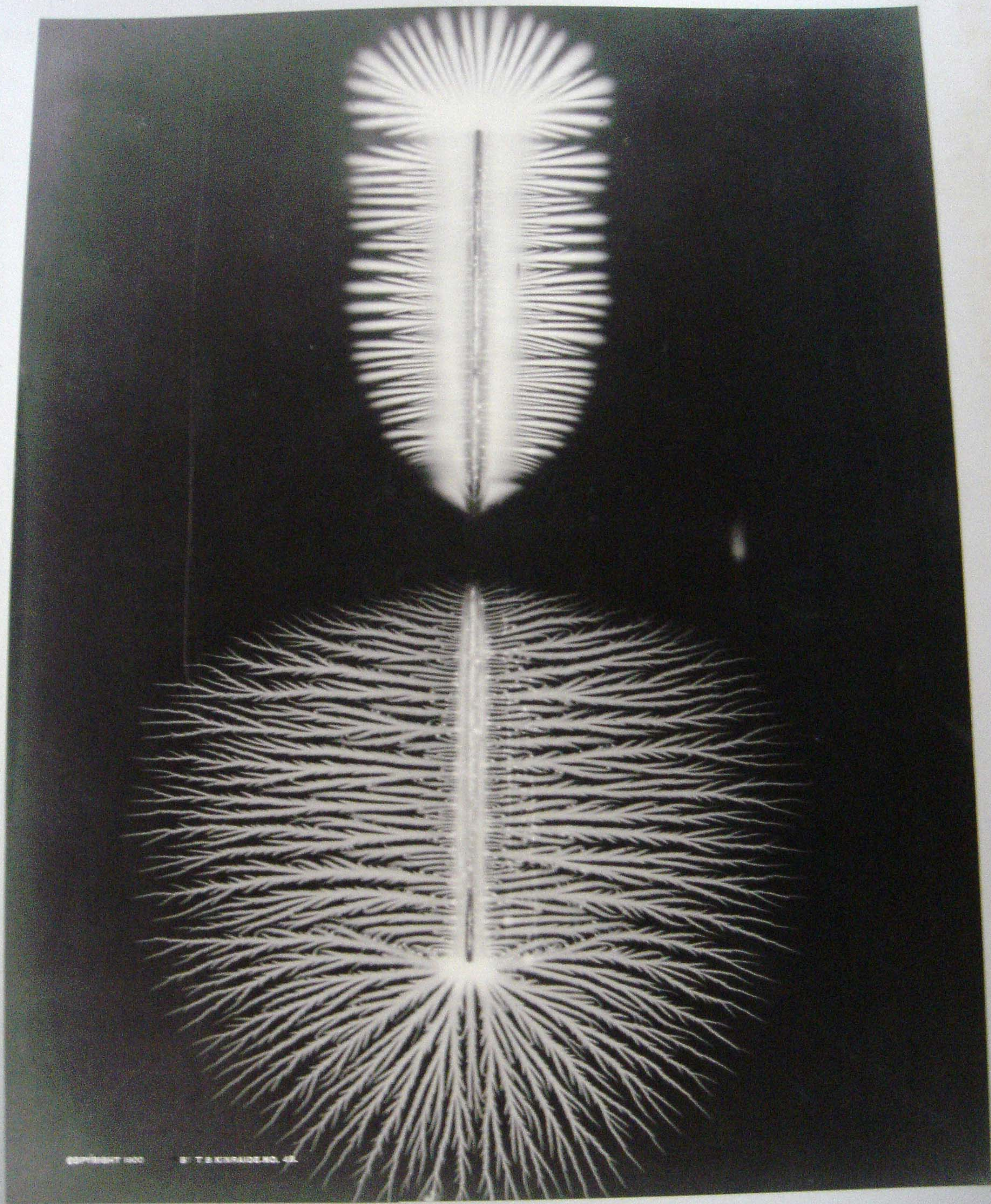
No. 50.

THE NEGATIVE PHASE OF ELECTRIC ENERGY.

(Enlarged)

A transfer of Electric force from a surface not charged to a Negative point at the centre.

Condenser Series.



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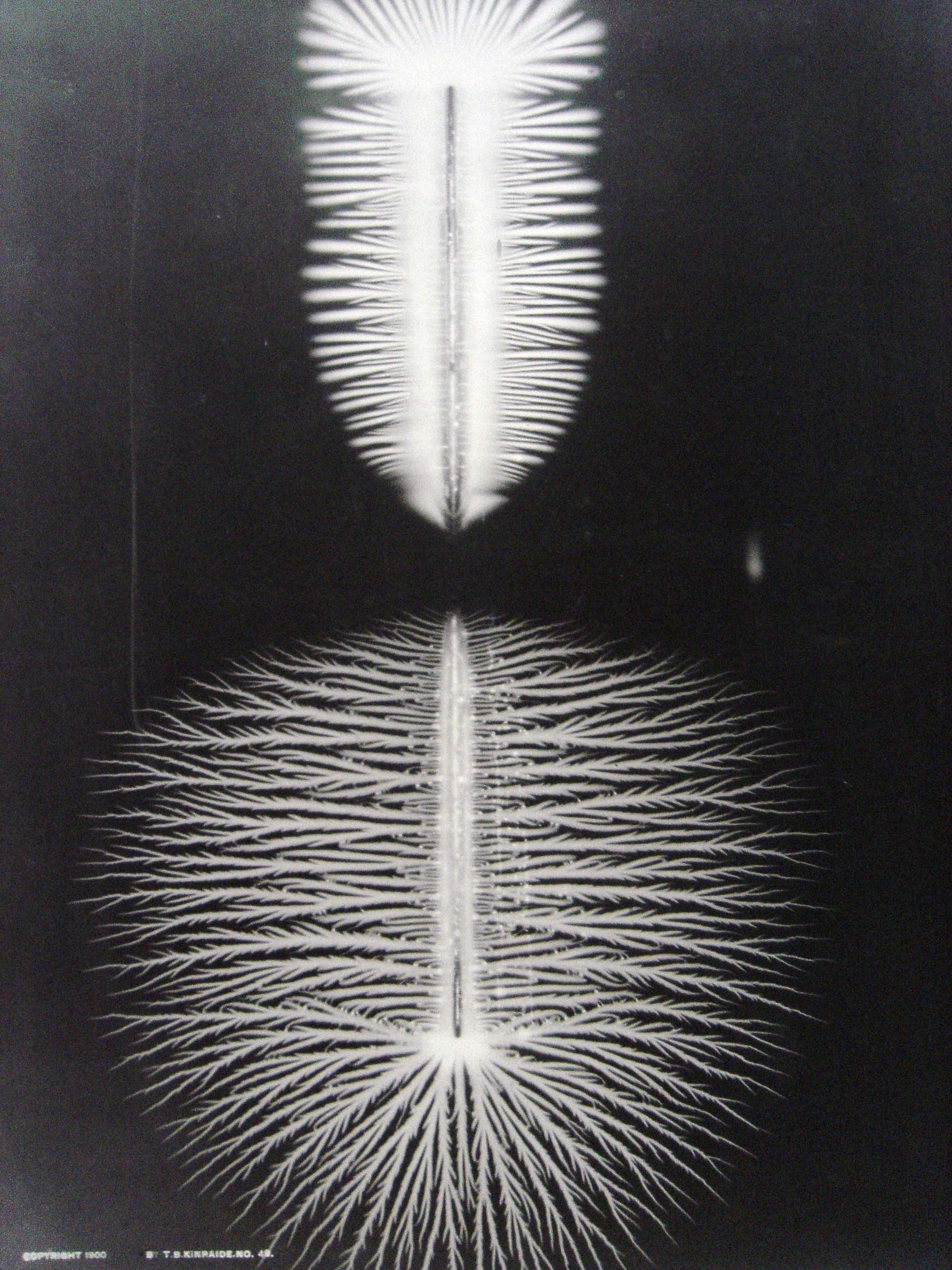
E. T. KERRIDGE, JR.

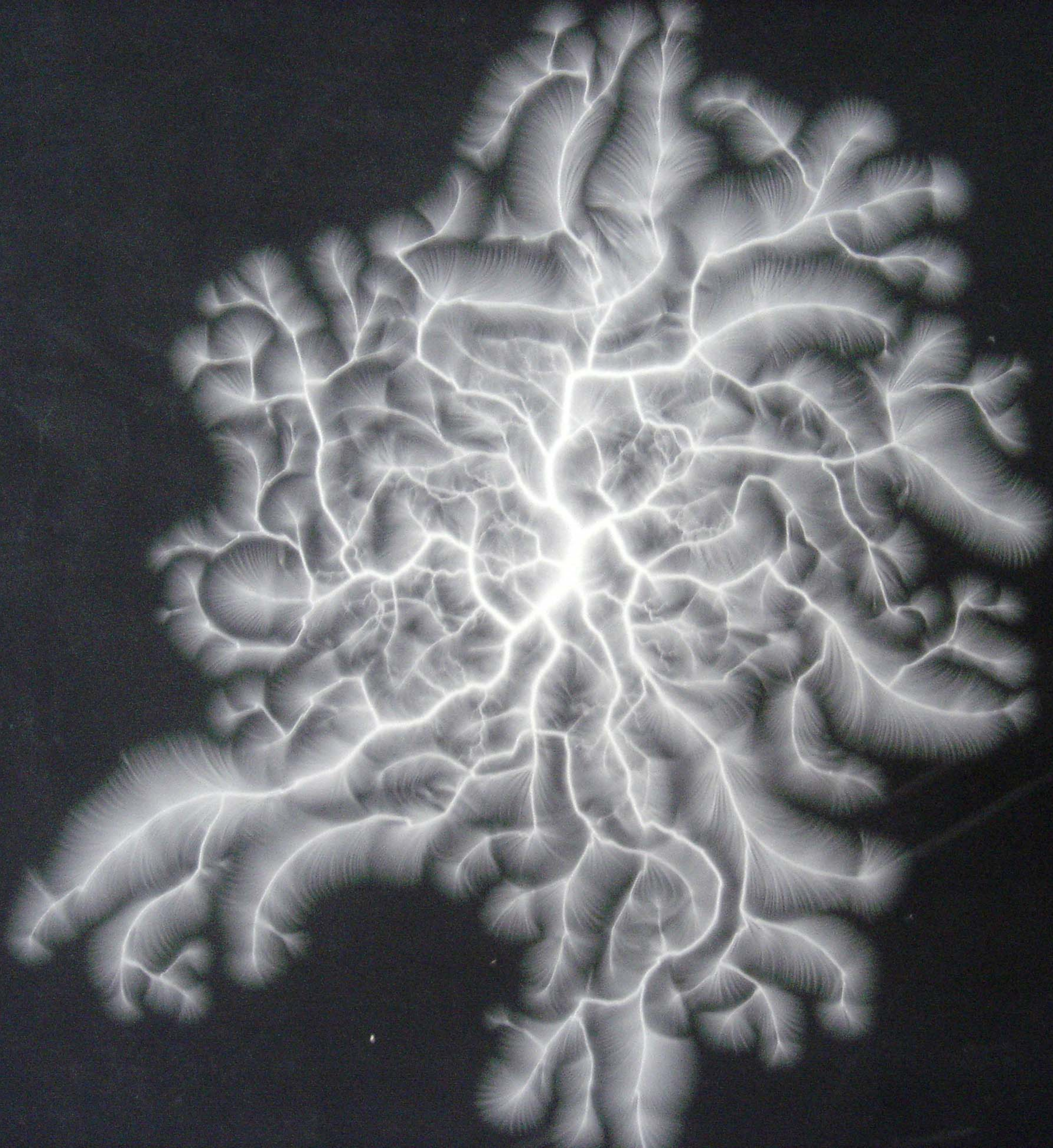
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OF ECTODERM

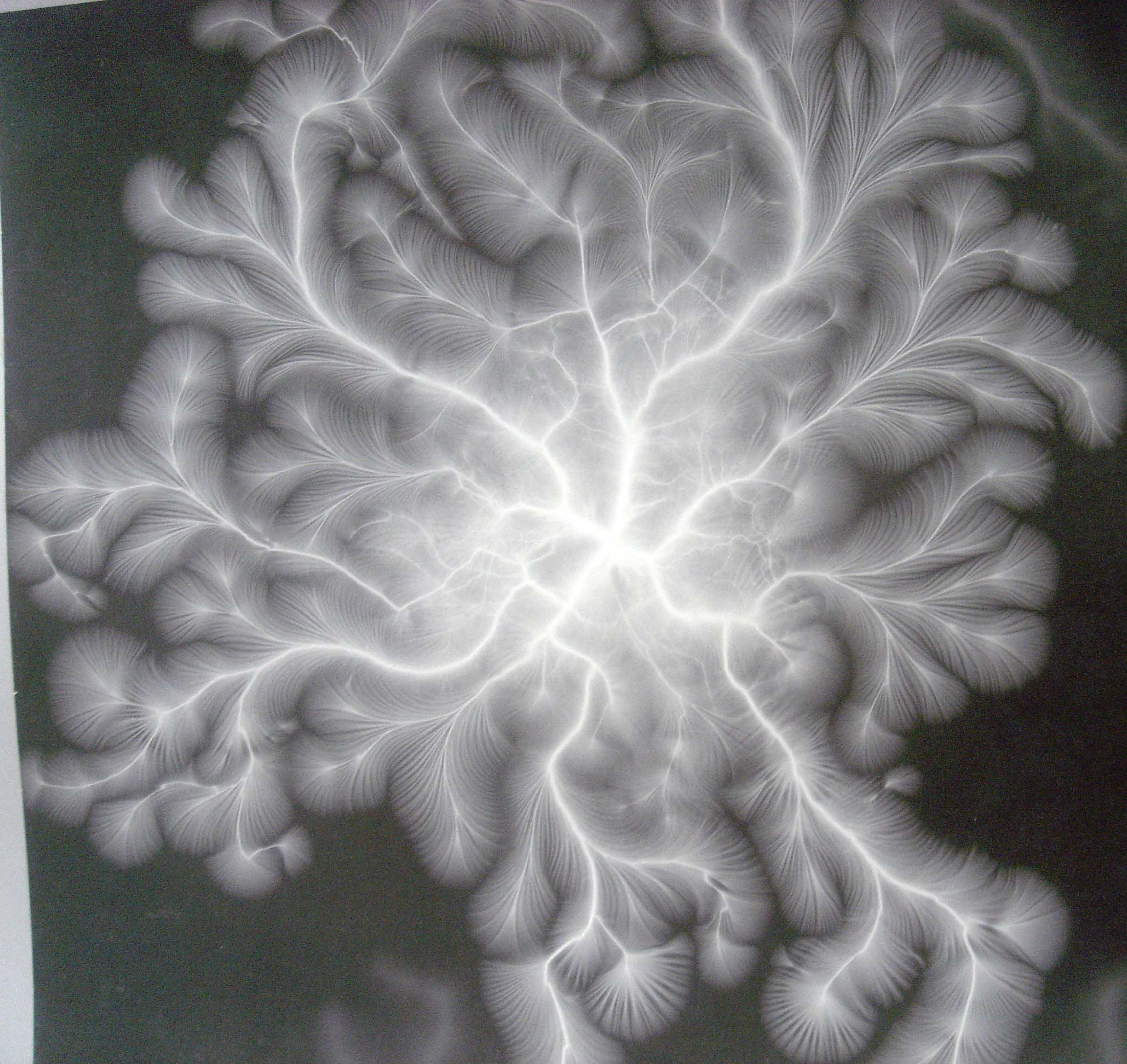
(Enlarged)

London, 1899.













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No. 23.

PRIMARY ENTITIES OF ELECTRICITY.

(Enlarged)

Discharge of Electricity through a two inch sphere placed upon a photograph plate laid flat side down upon a positively charged uncoated condenser surface. The phenomena of the two-phases of Electricity in series between condenser surfaces.
Condenser Series.



No. 42

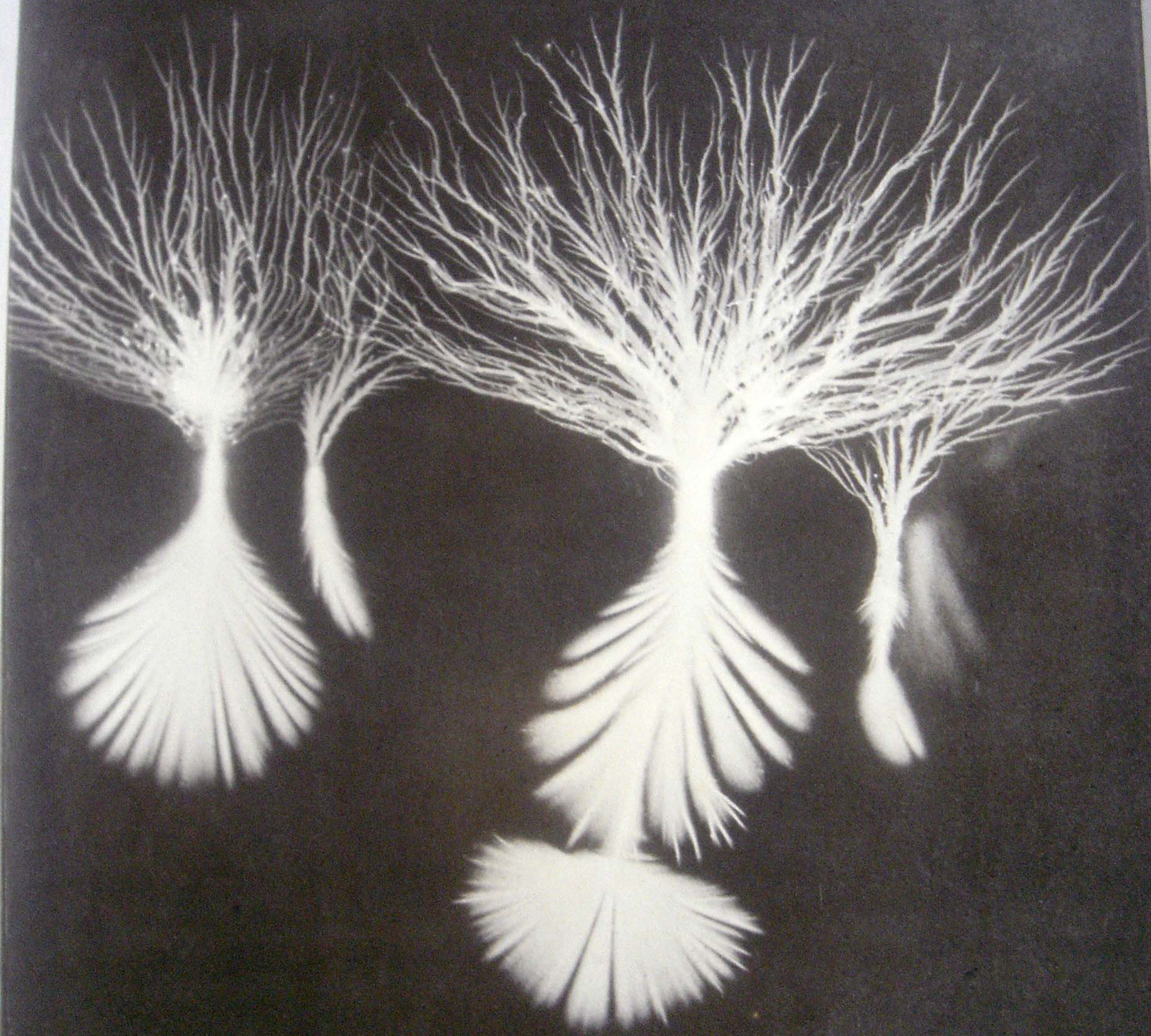
Autograph of the Positive and Negative Phases of Electricity.

Enlarged

A discharge of Electricity over a curved conductor surface towards the edge of a disk placed upon the film side of a photo-graph plate producing the Negative phase. The corresponding Positive phase constituted the return discharge of the same back over the same from the edge of the disk.

James Clerk

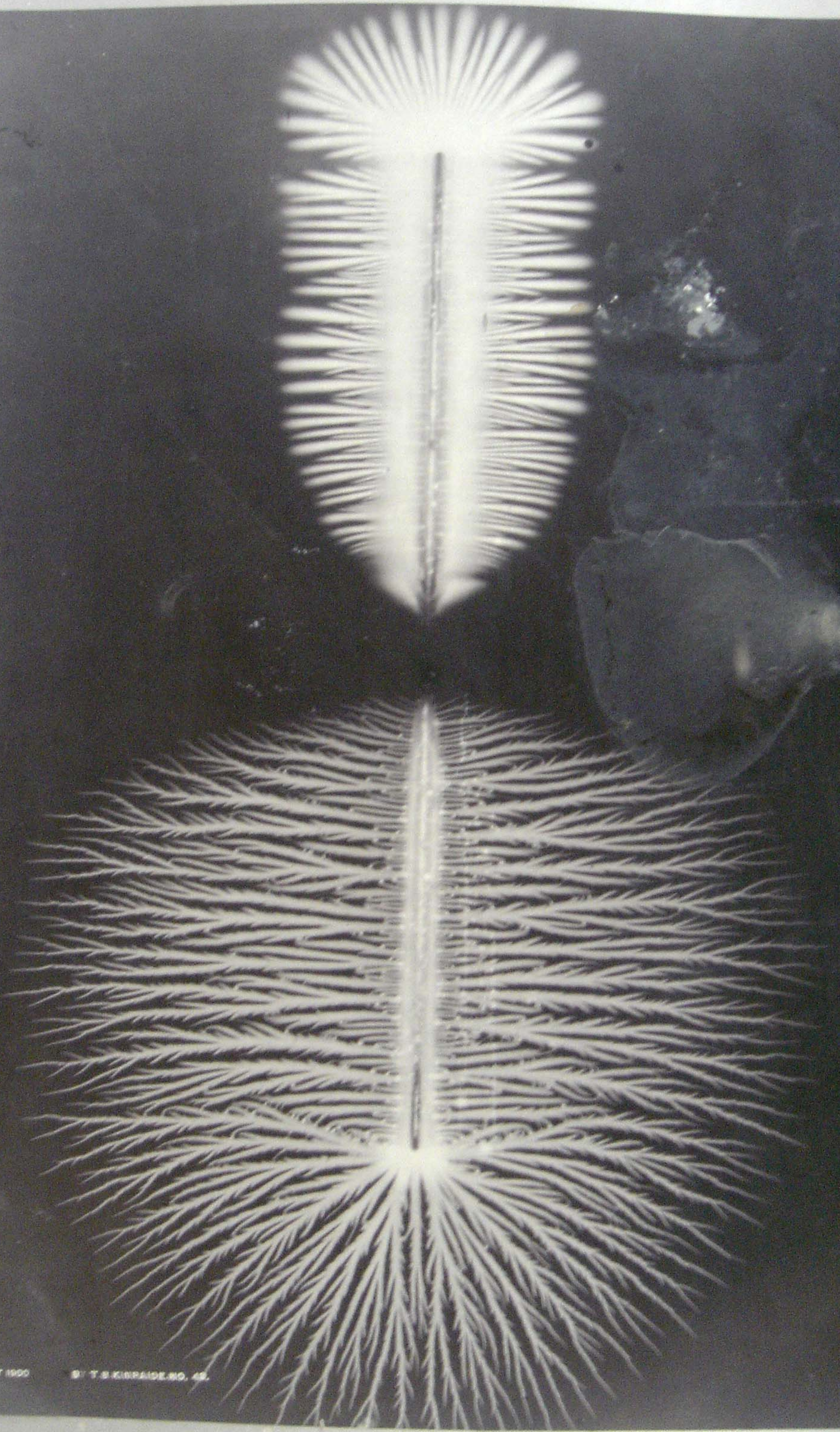
















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No. 49.

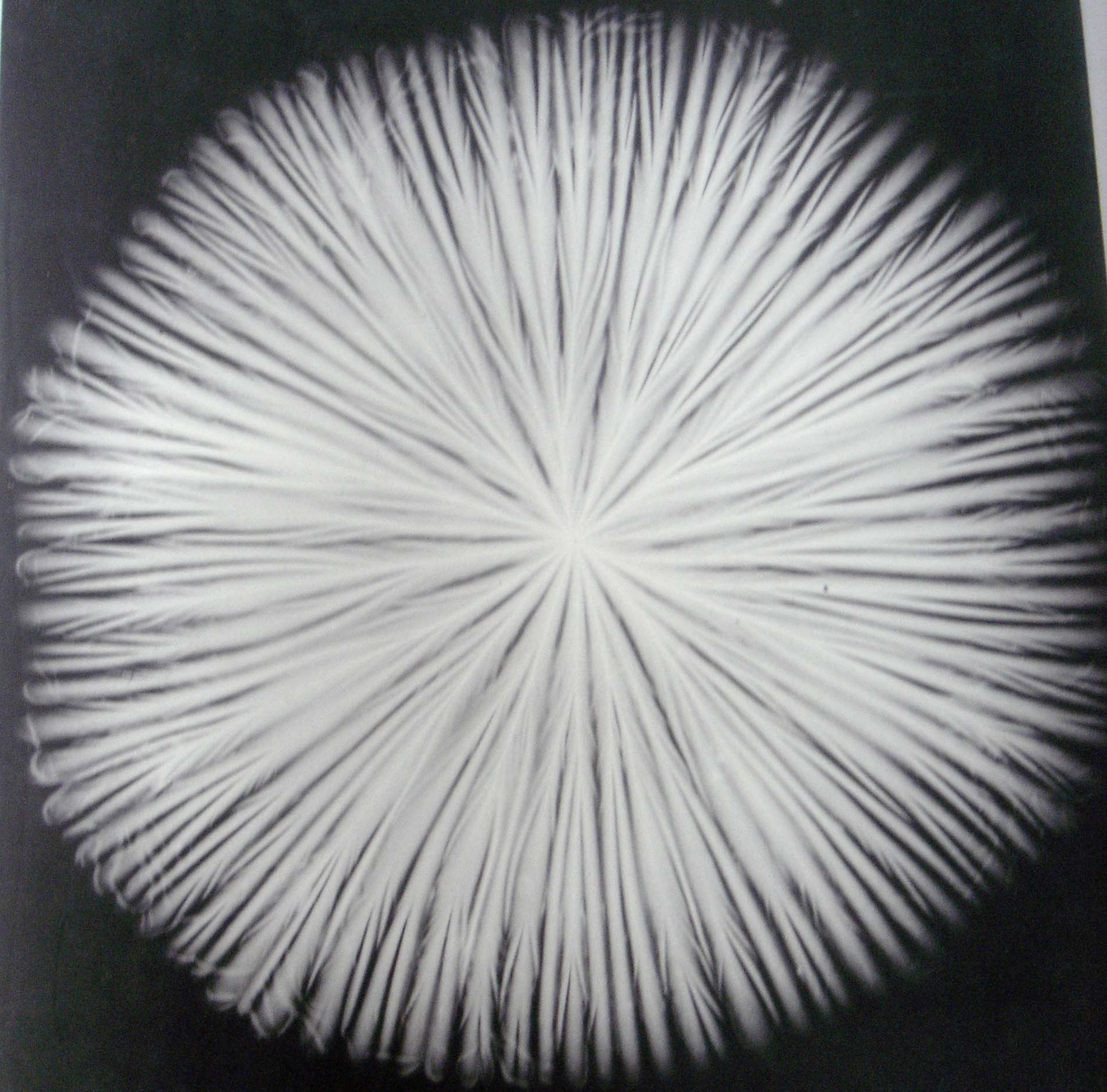
CC

TH. L.

(Enlarged)

Placed by placing the plate on a level surface and then the charged surface of the plate over a well-charged surface.

Continued Series.









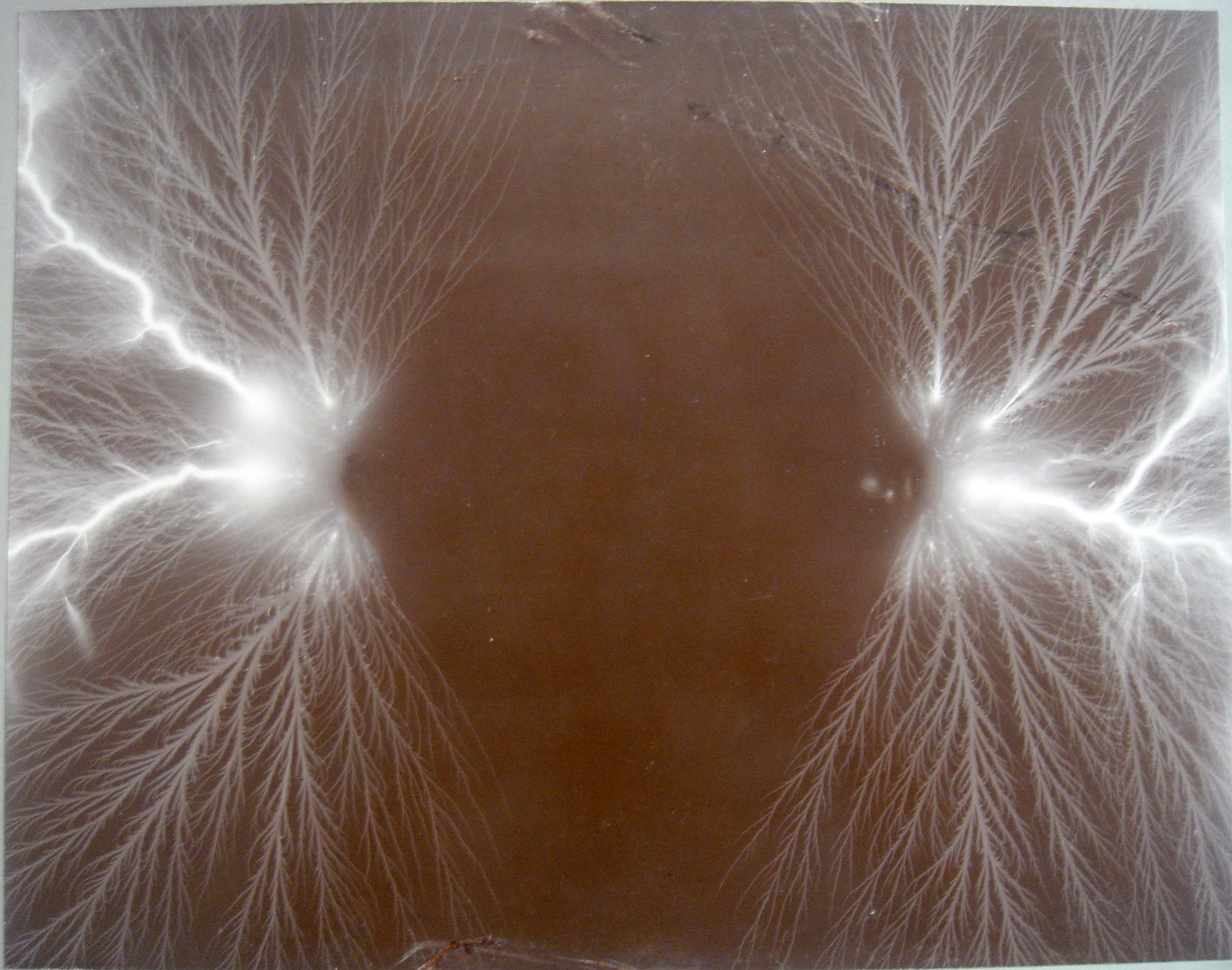




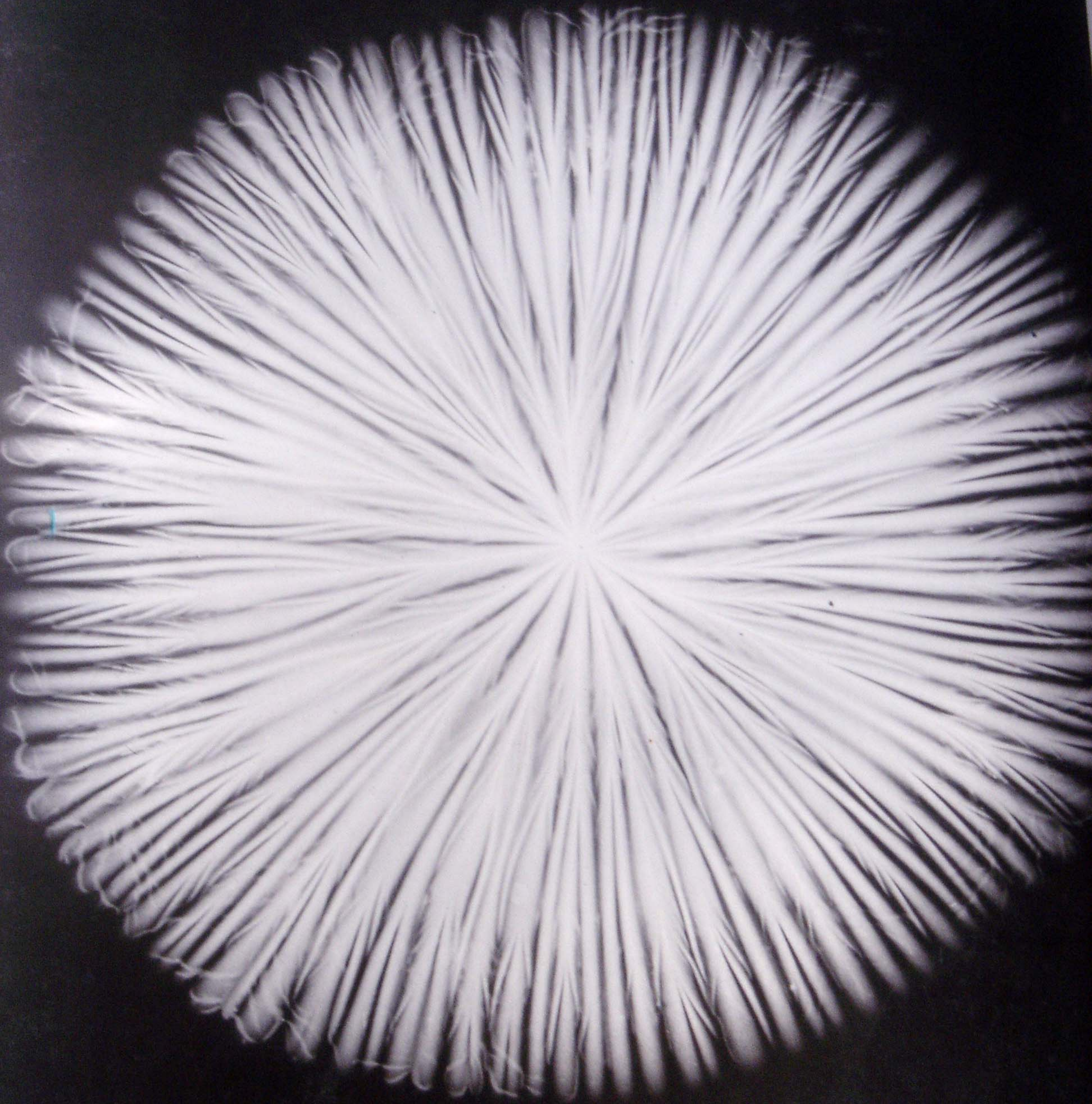


STU THE NEGATIVE PHASE OF ELECTRICITY (Enlarged)









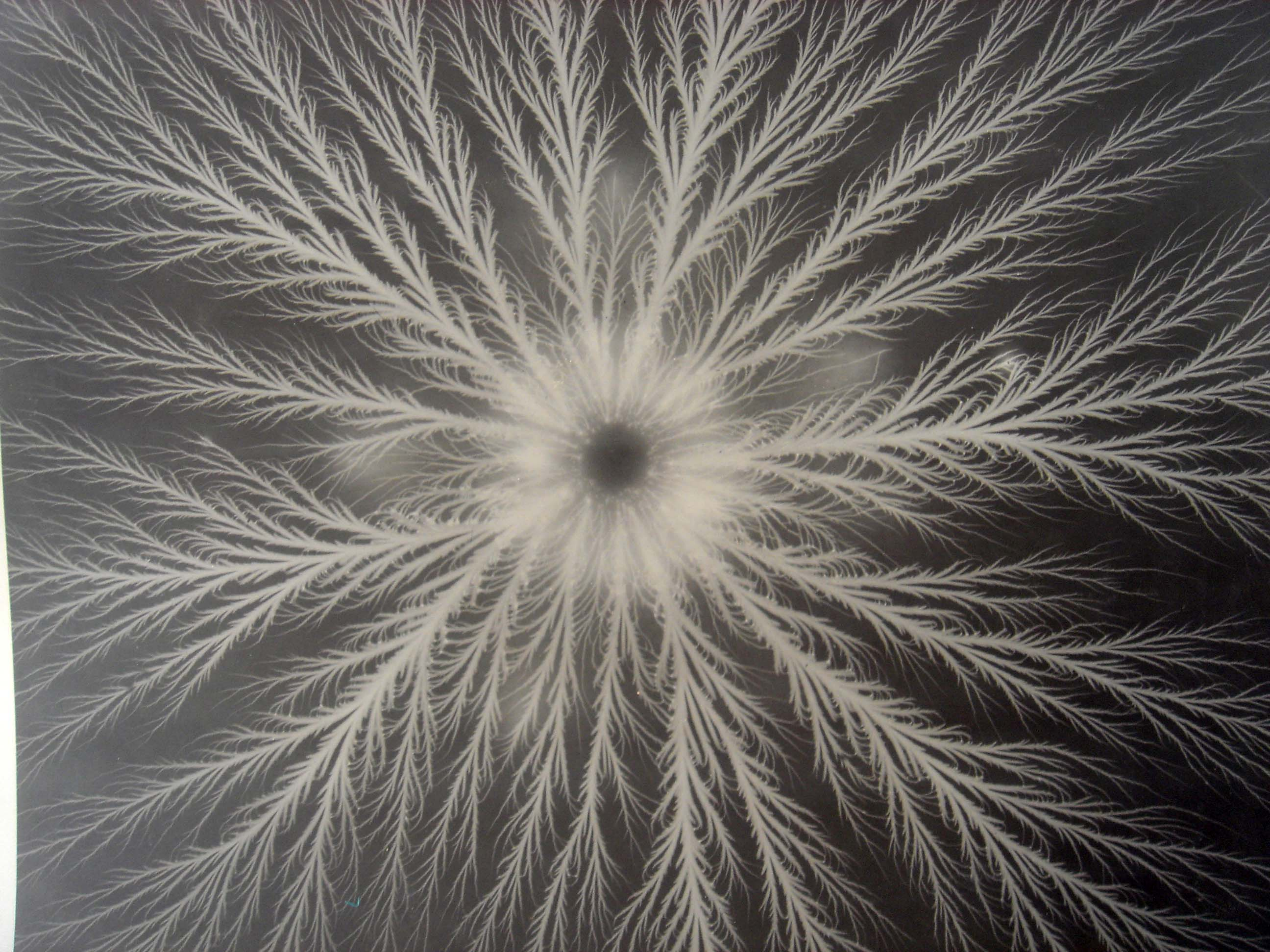


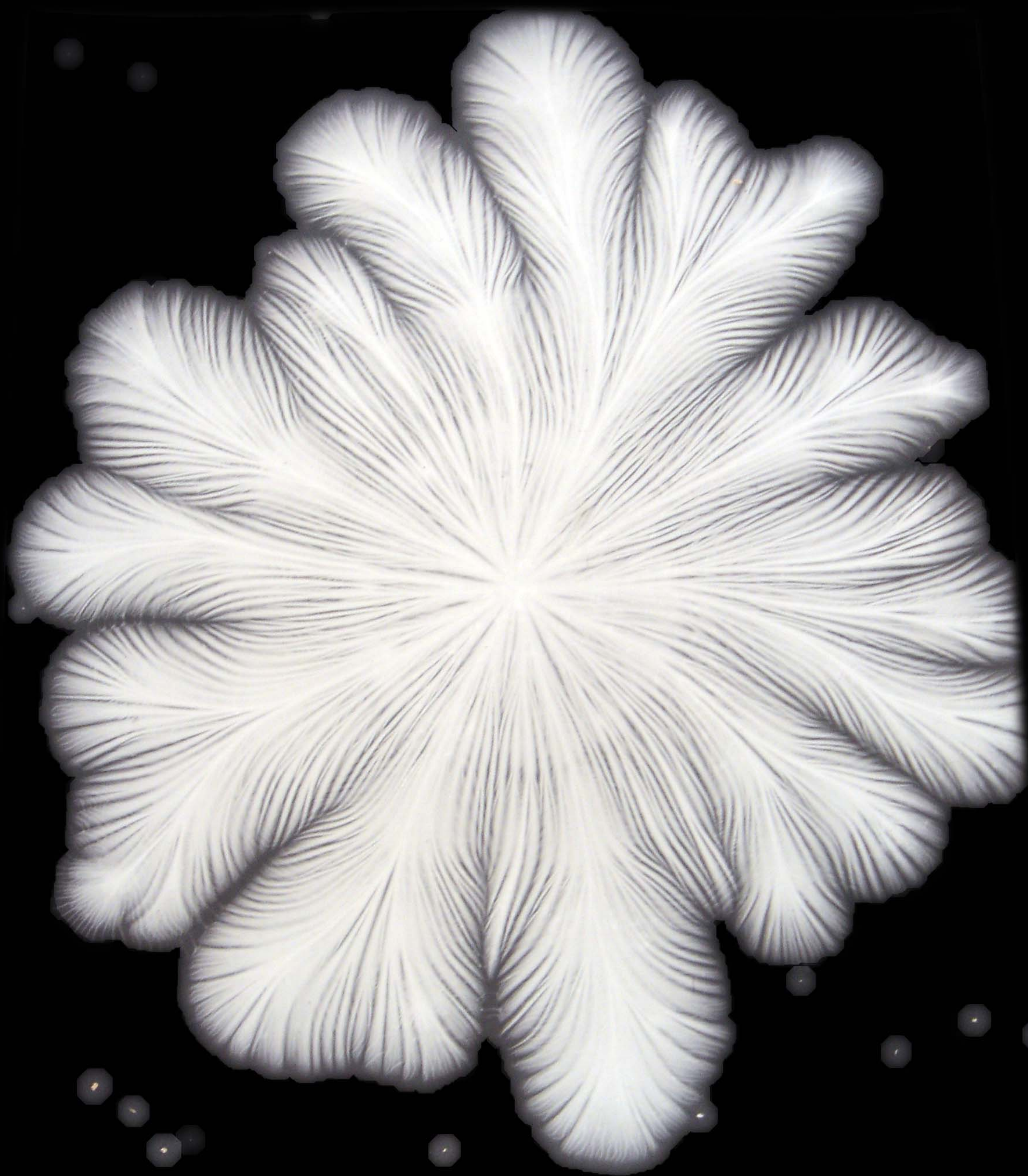
Positive Electricity with Negative Oscillation, Enlarged.



Copyright 1911 by Thomas A. Edison
*Very High Potential Oscillation of Positive and Negative Electricity.
Showing the Electric Comets. Not Enlarged.*







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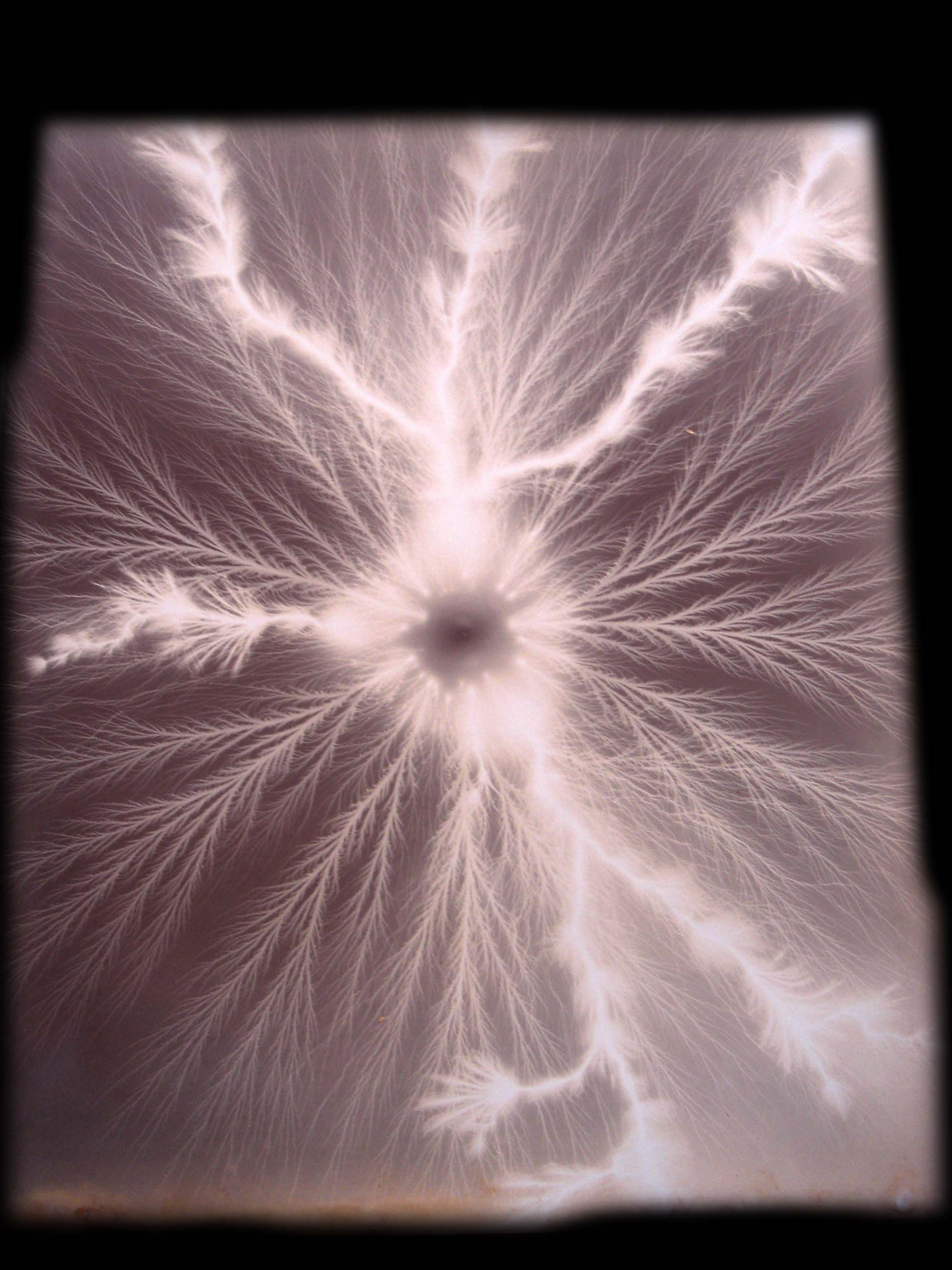


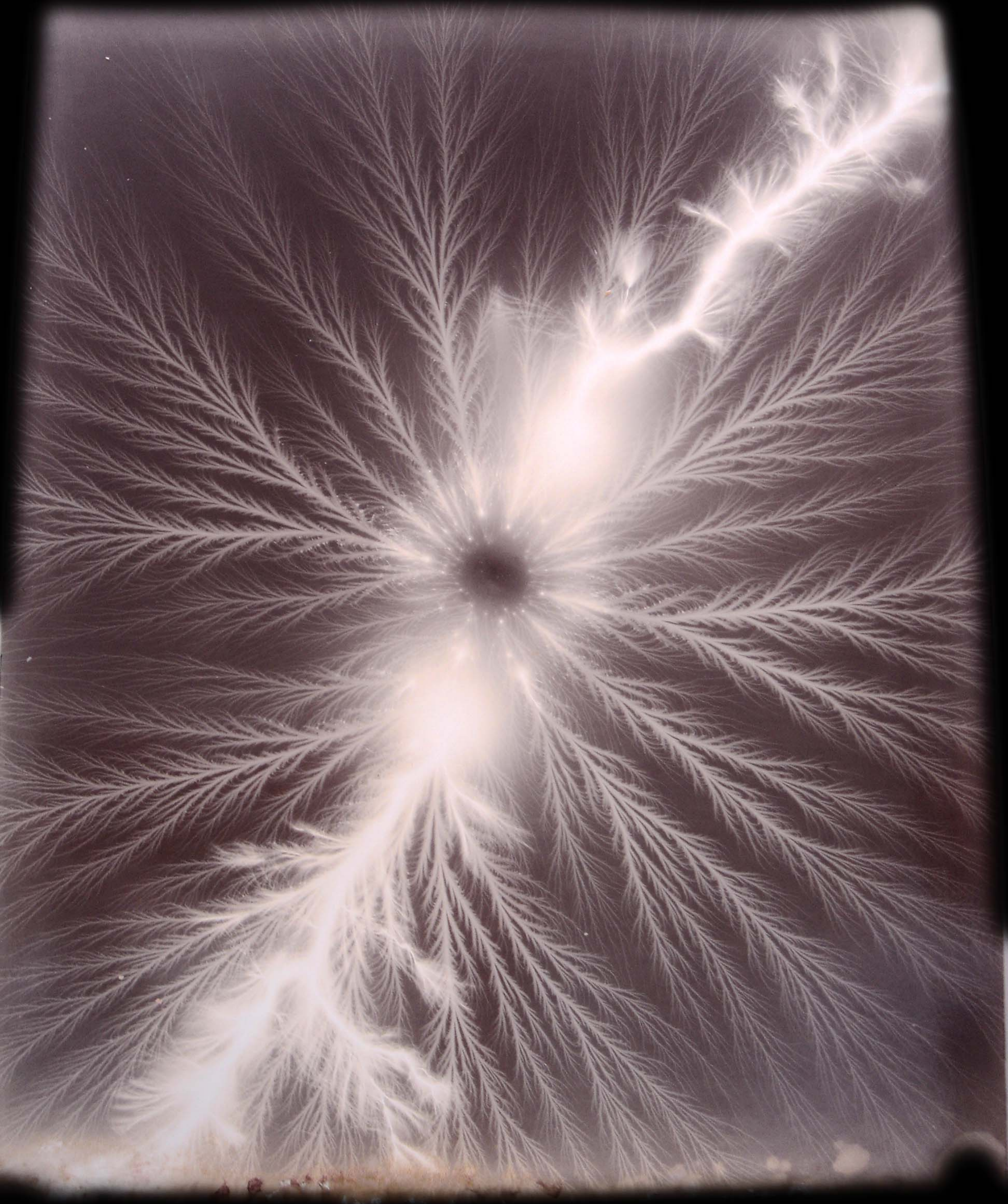




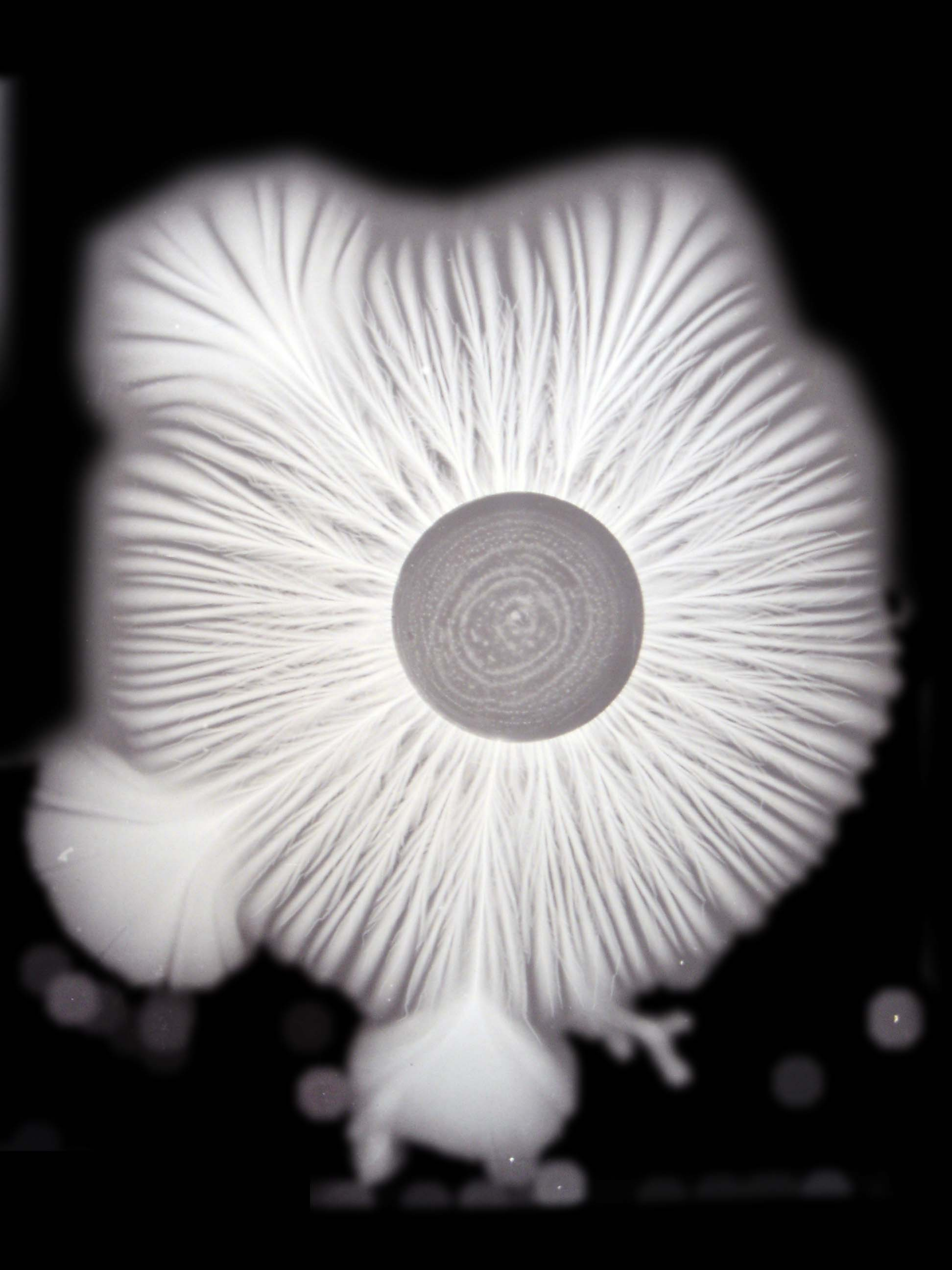


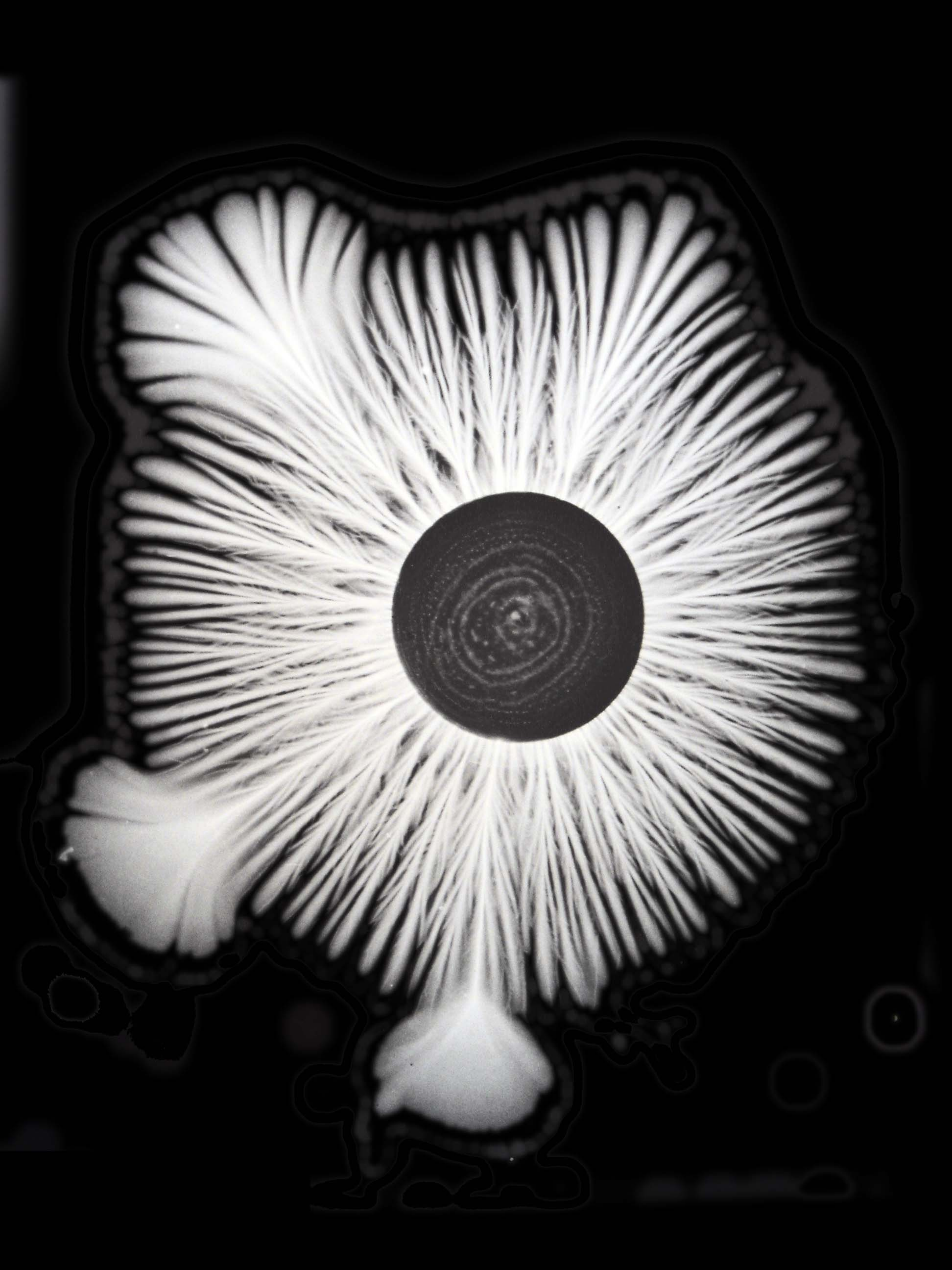
THE NEGATIVE PHASE OF
ELECTRICITY. (Enlarged)



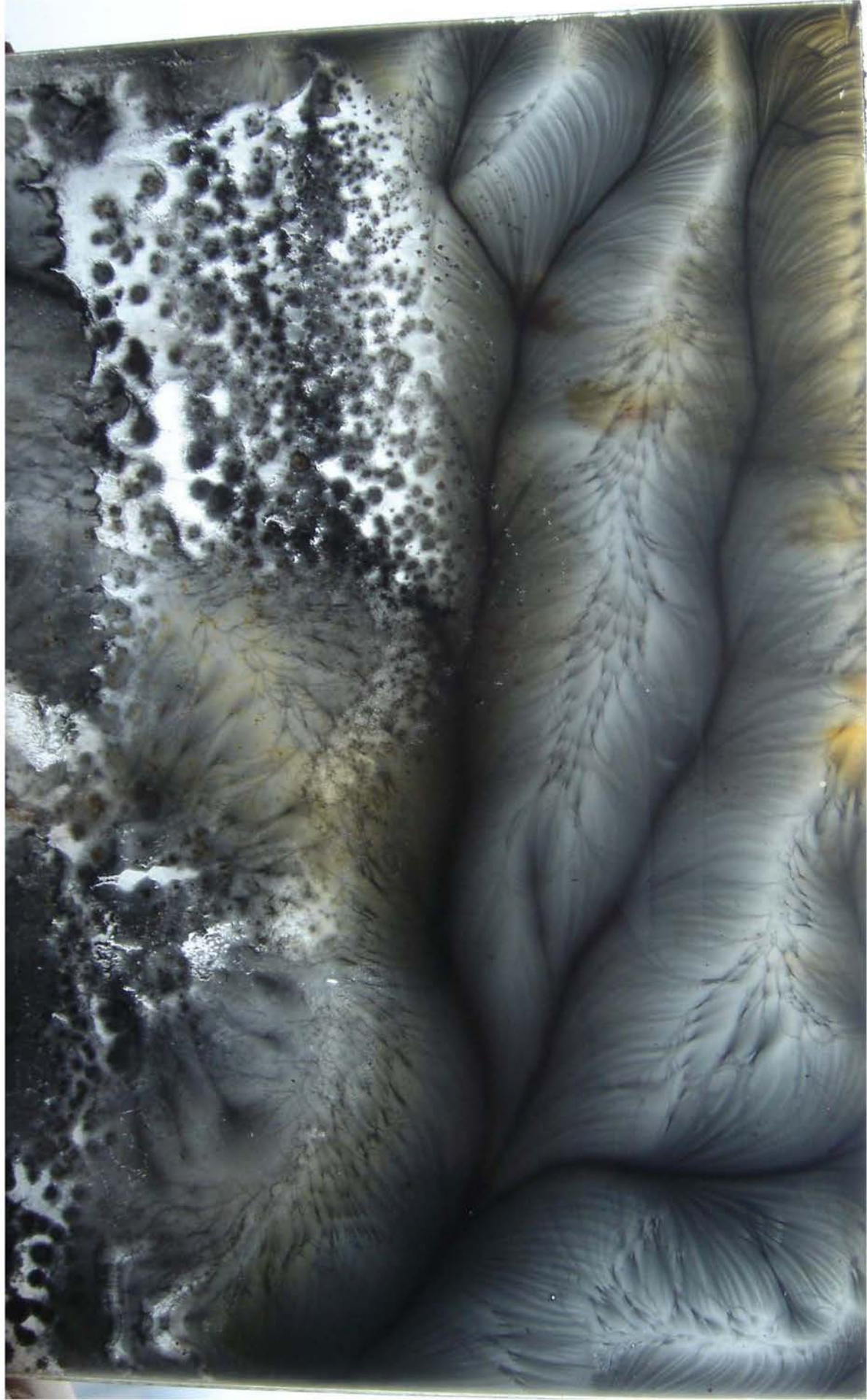






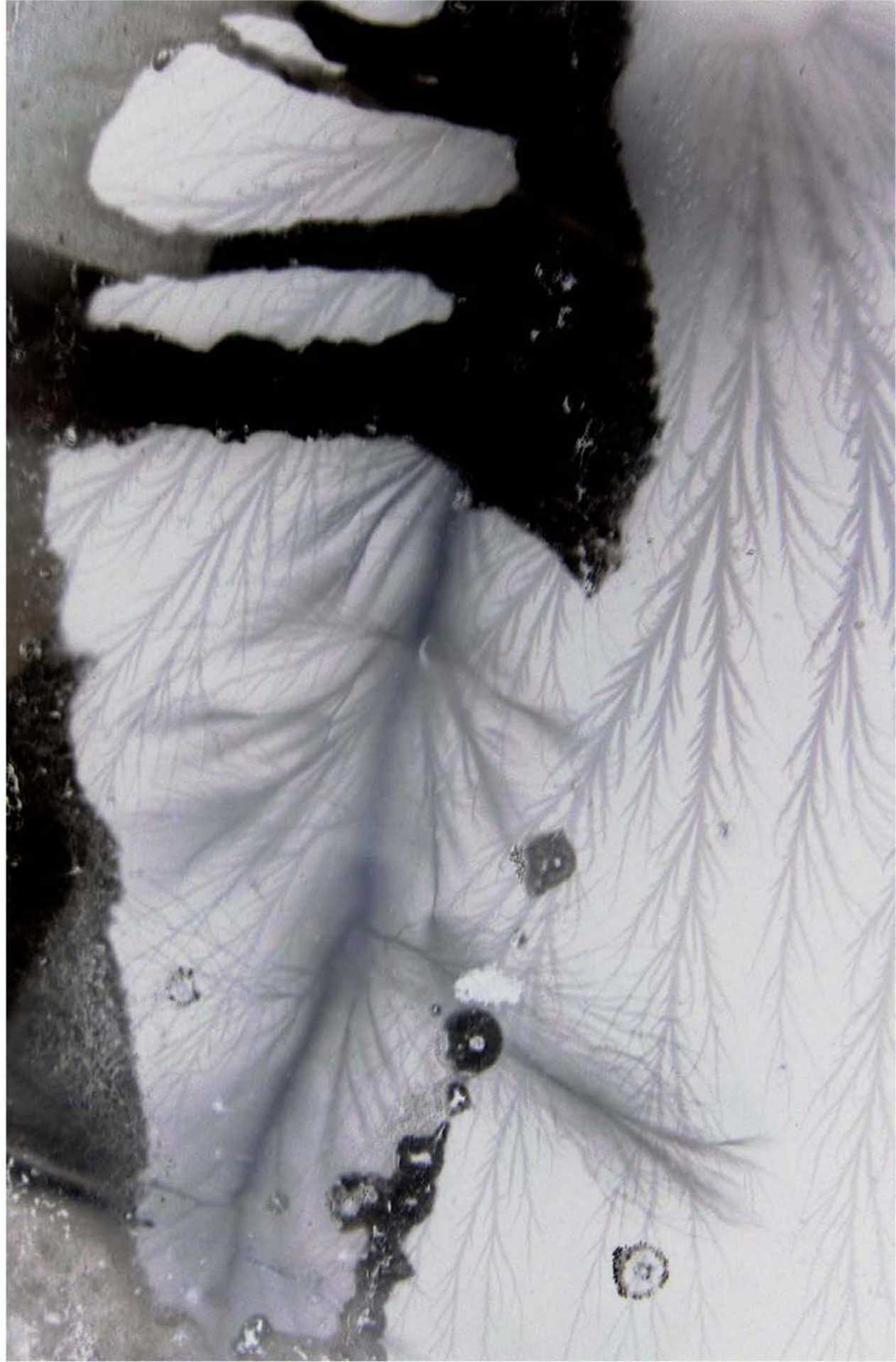






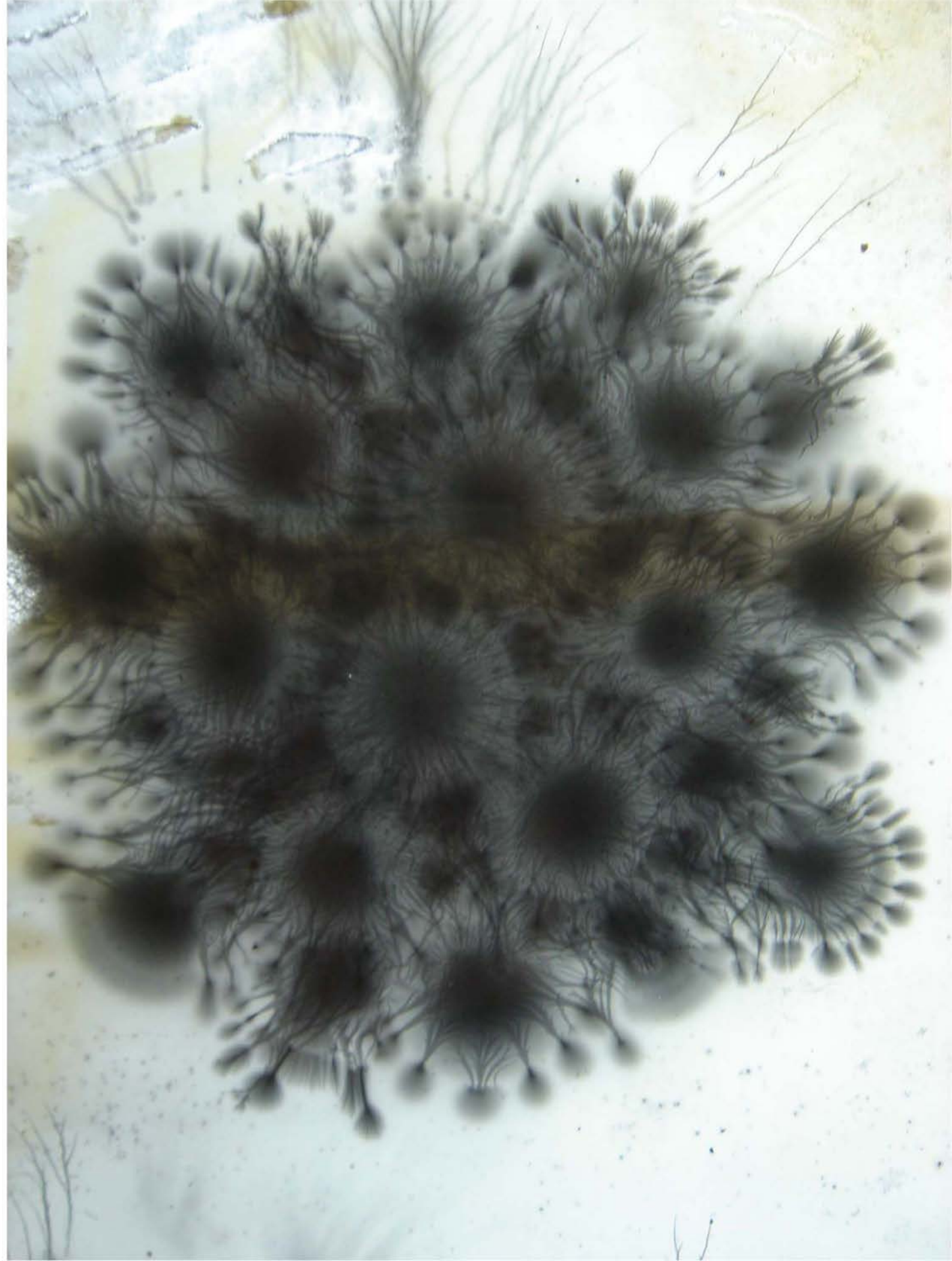




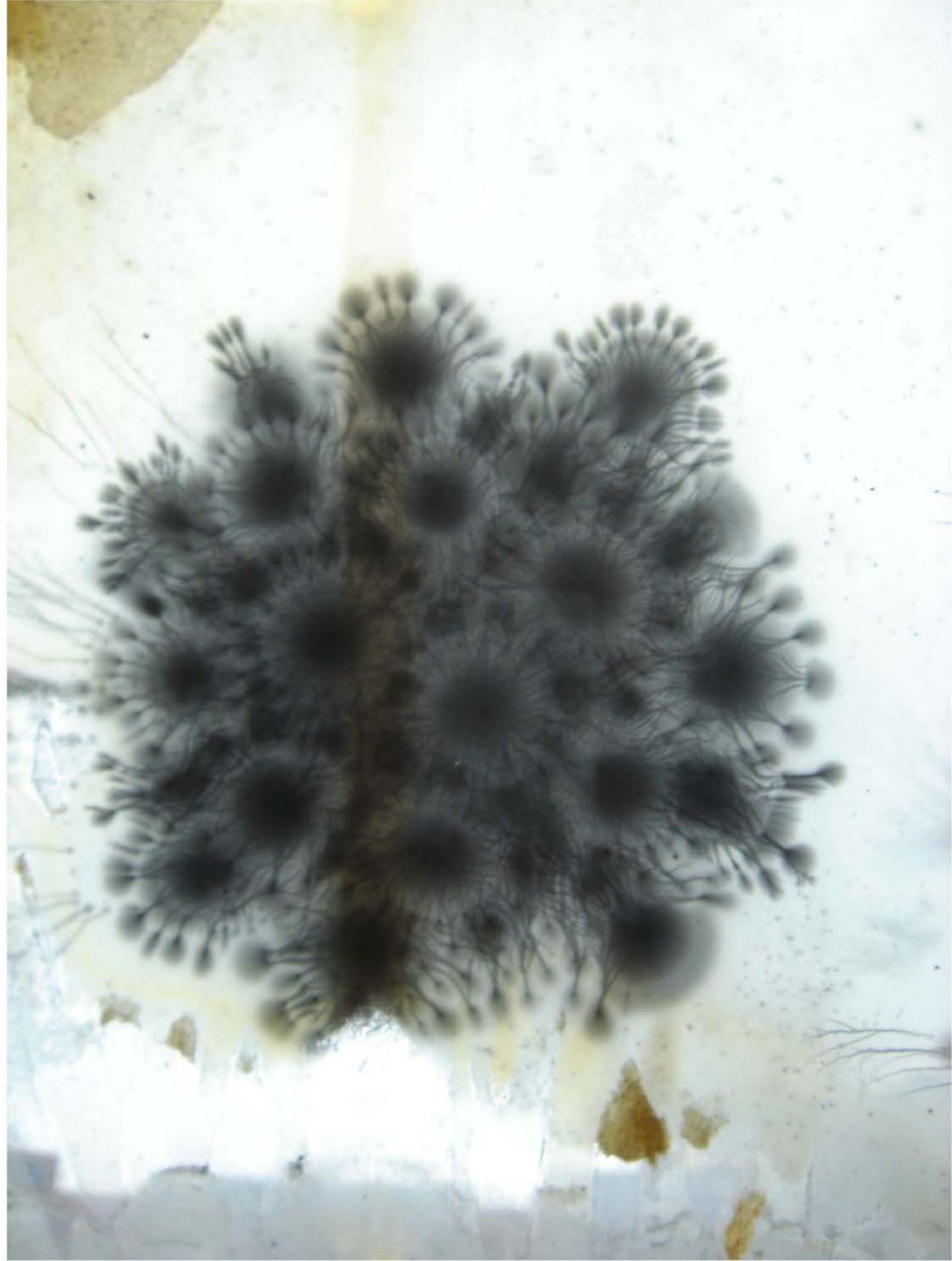






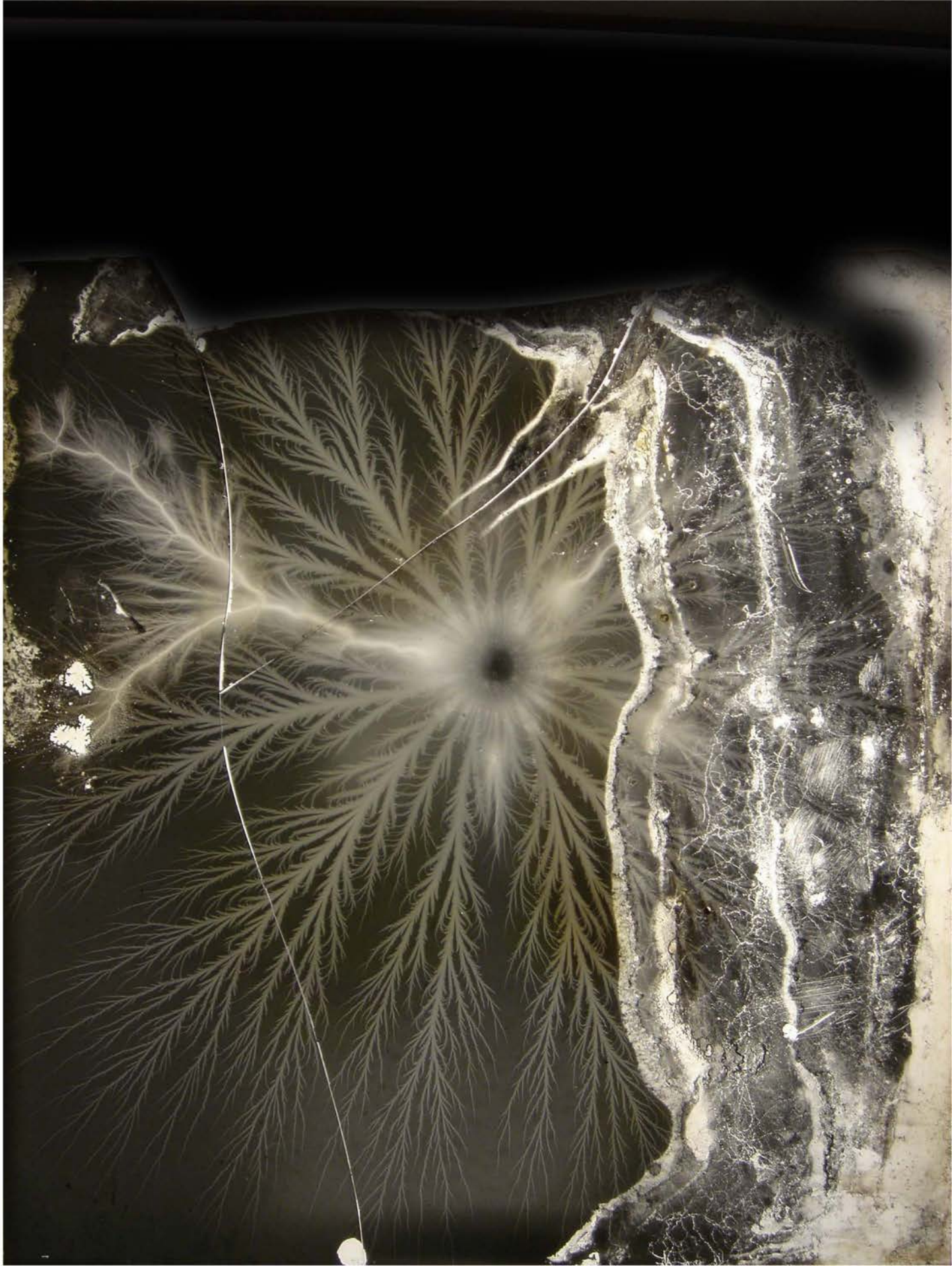


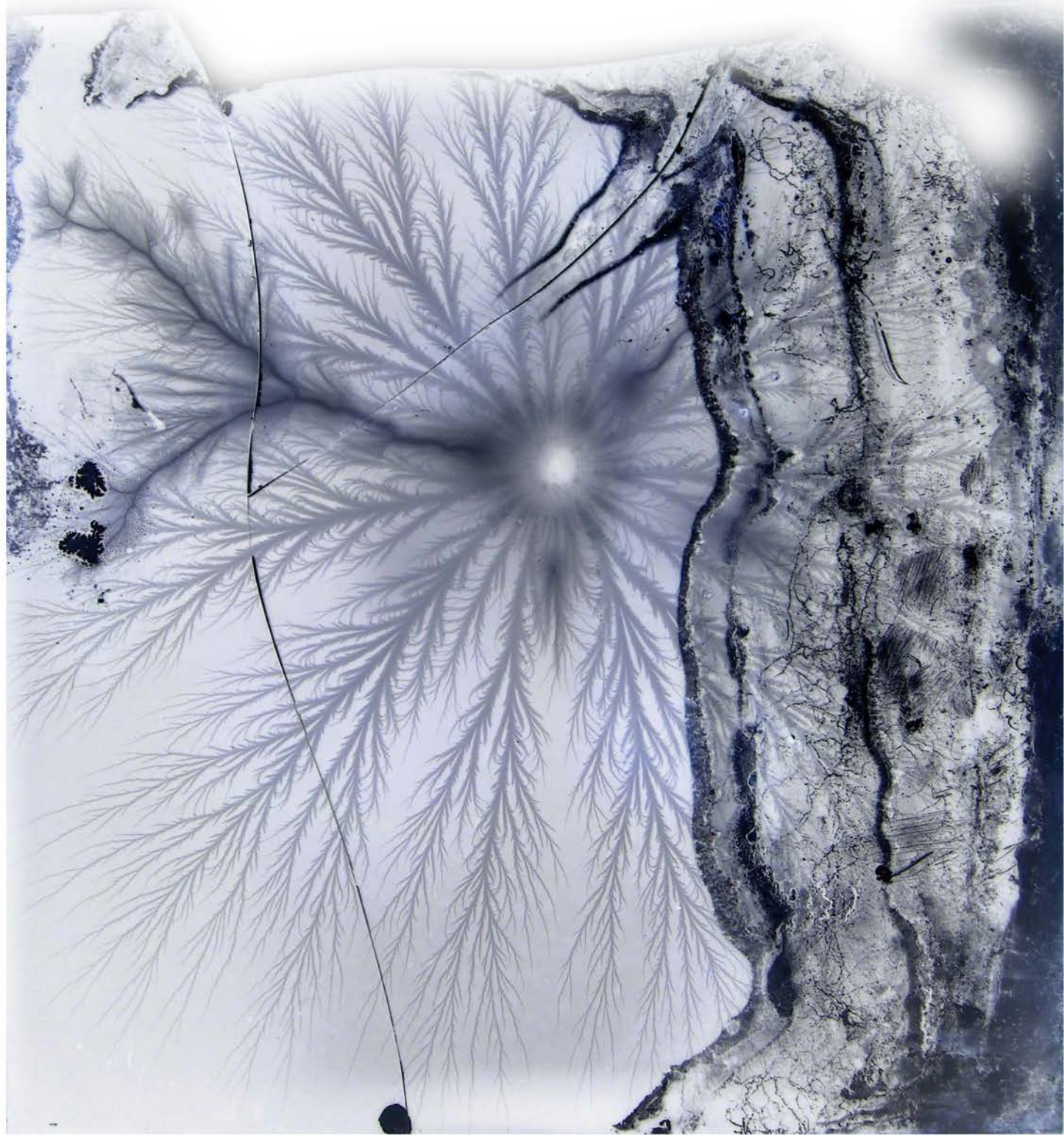




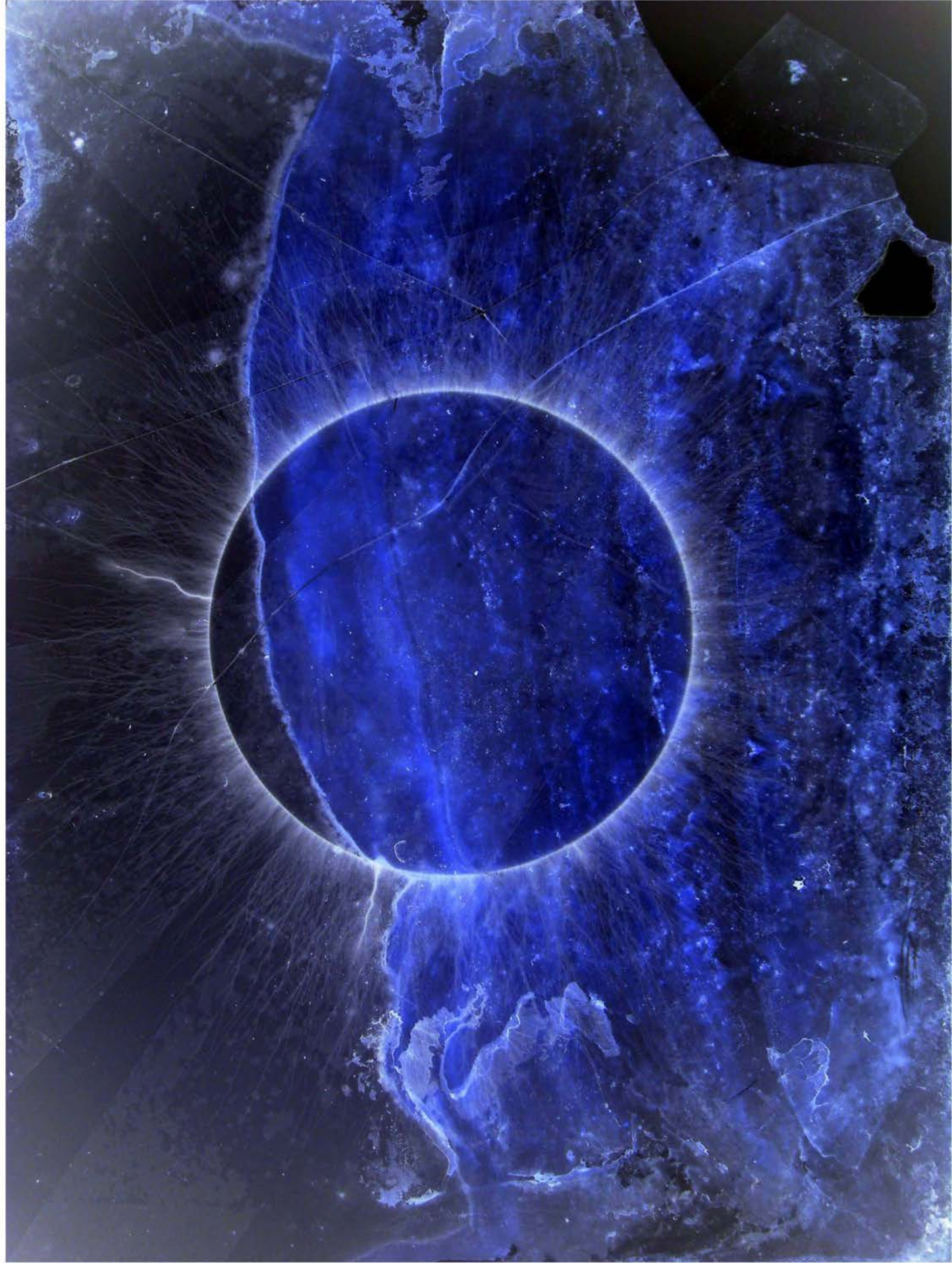






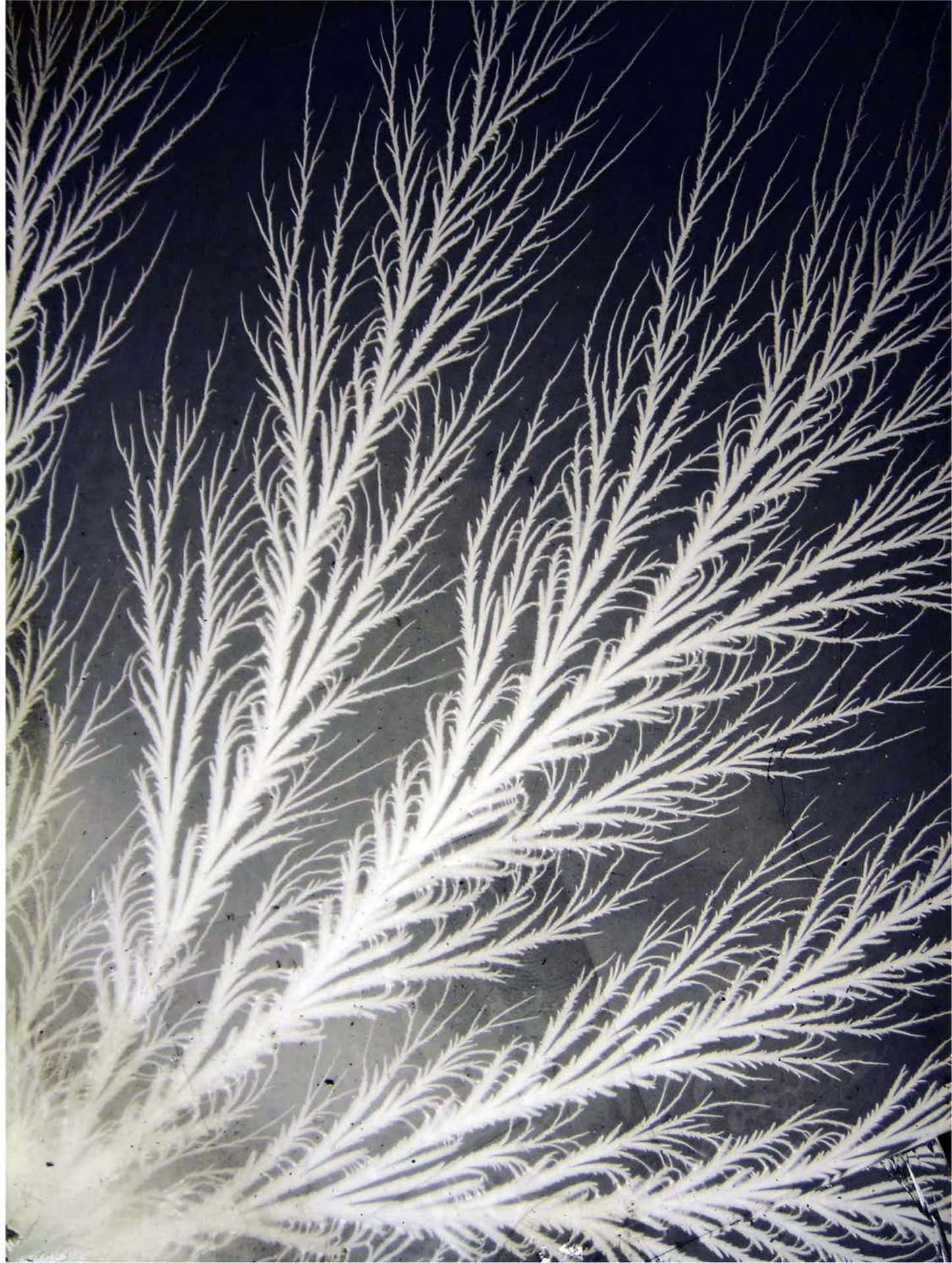




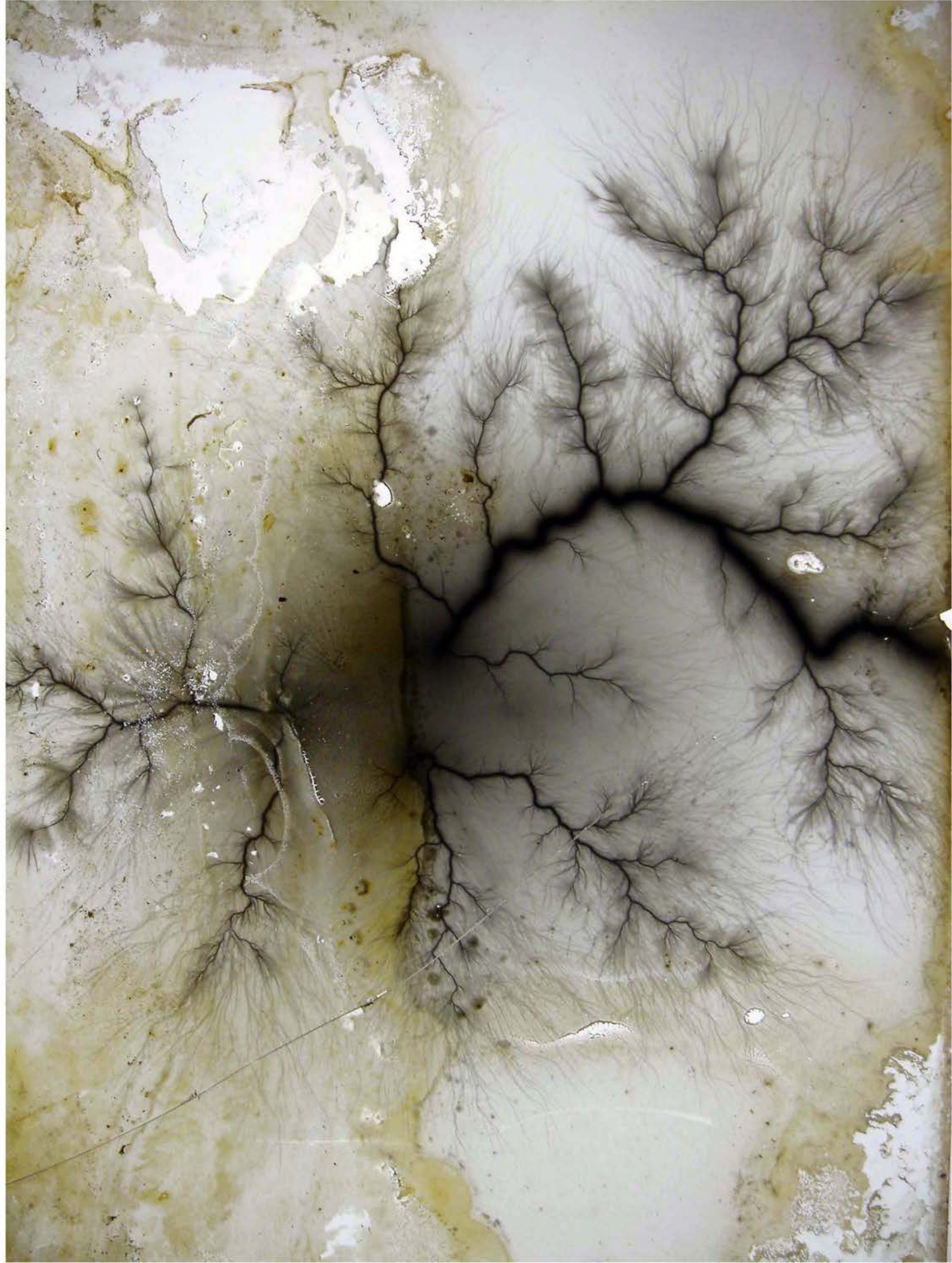








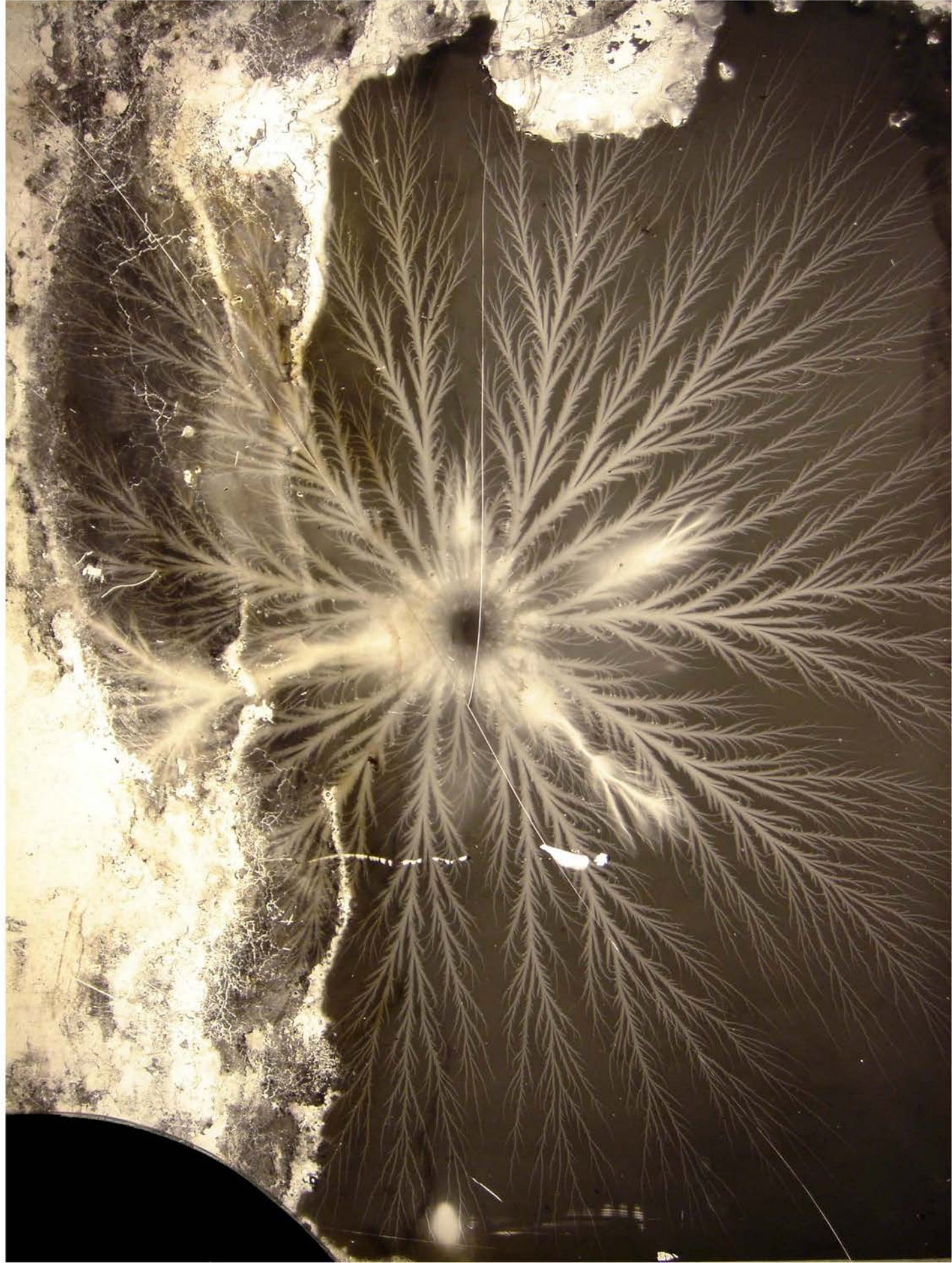


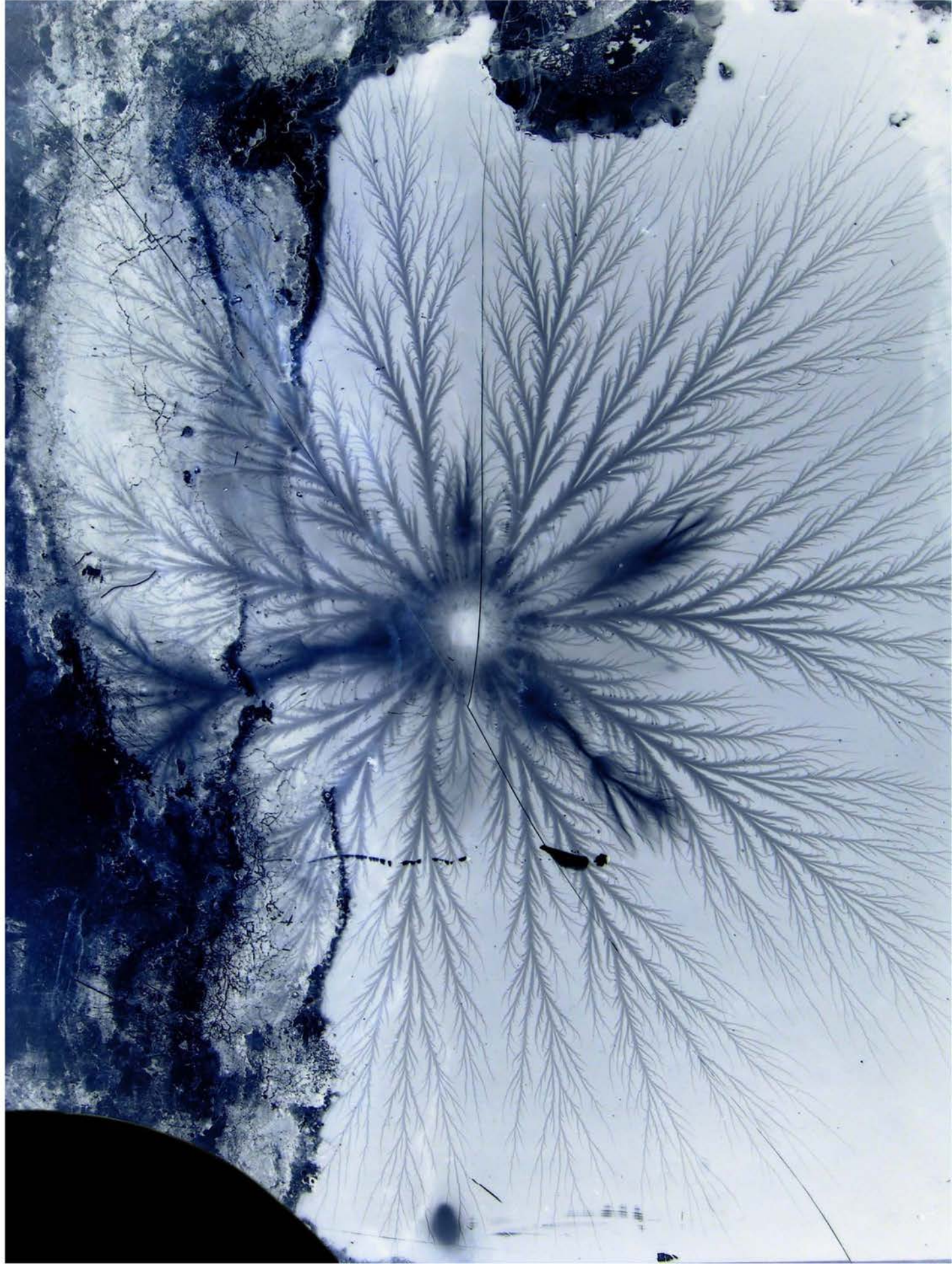








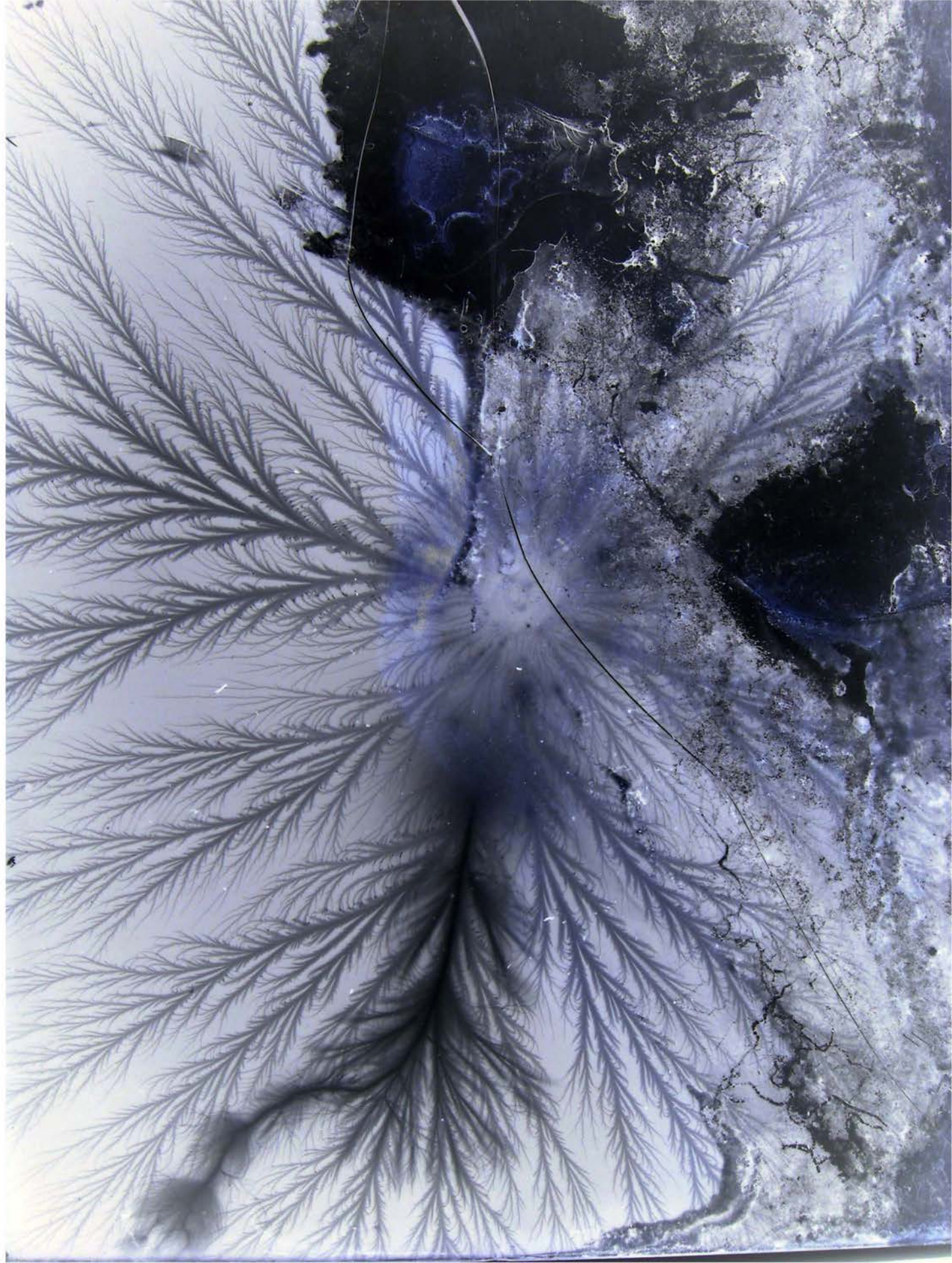








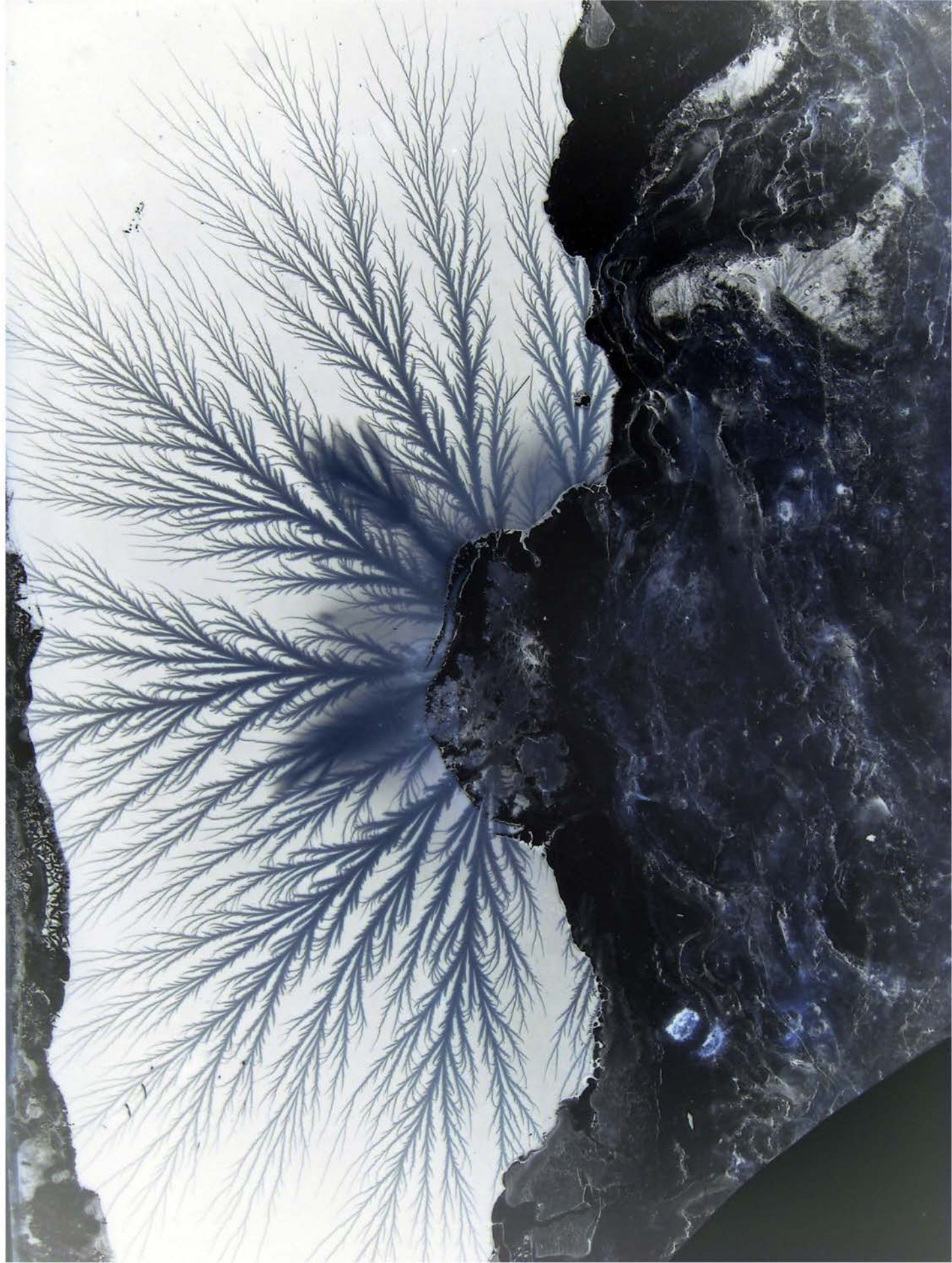


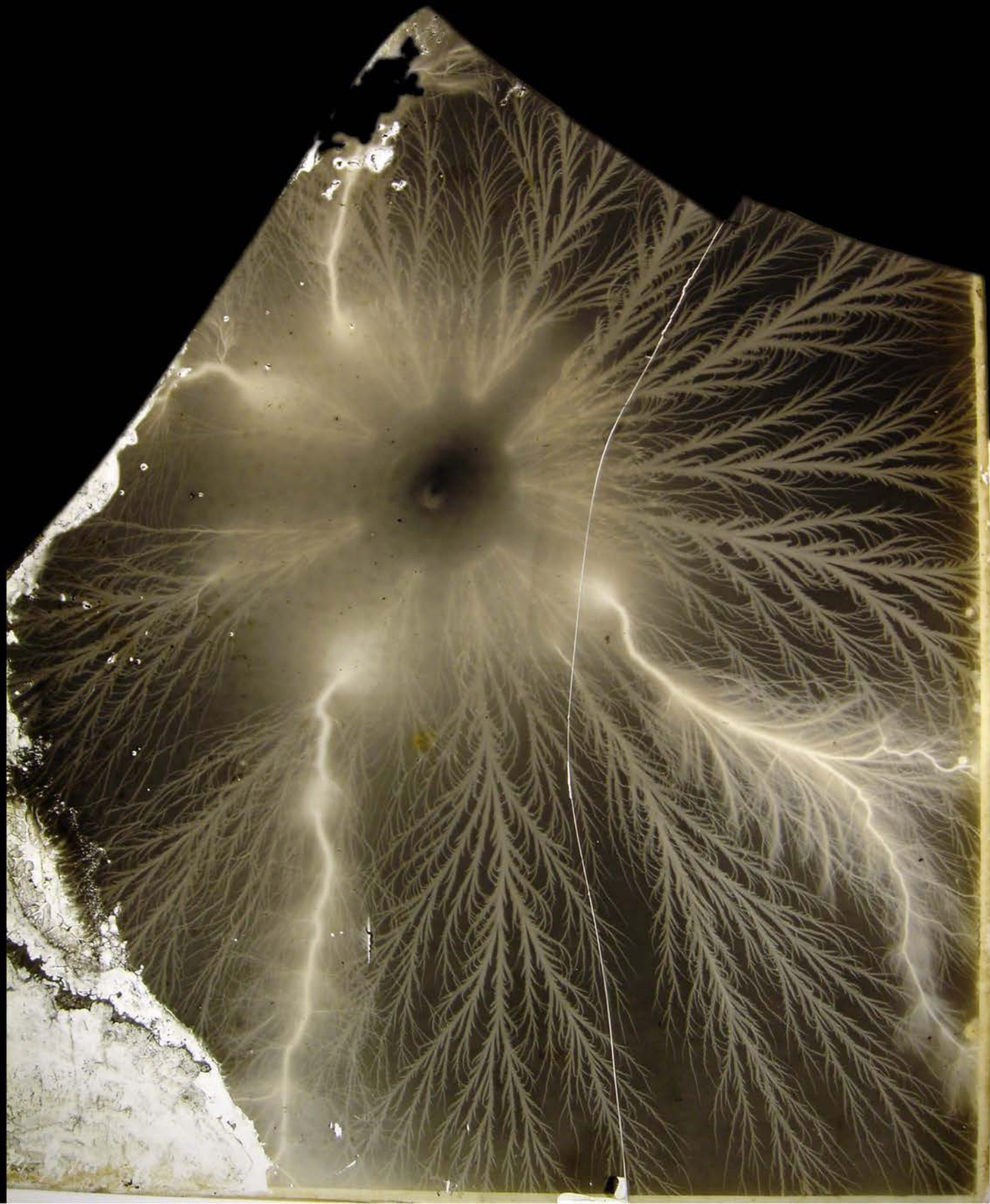


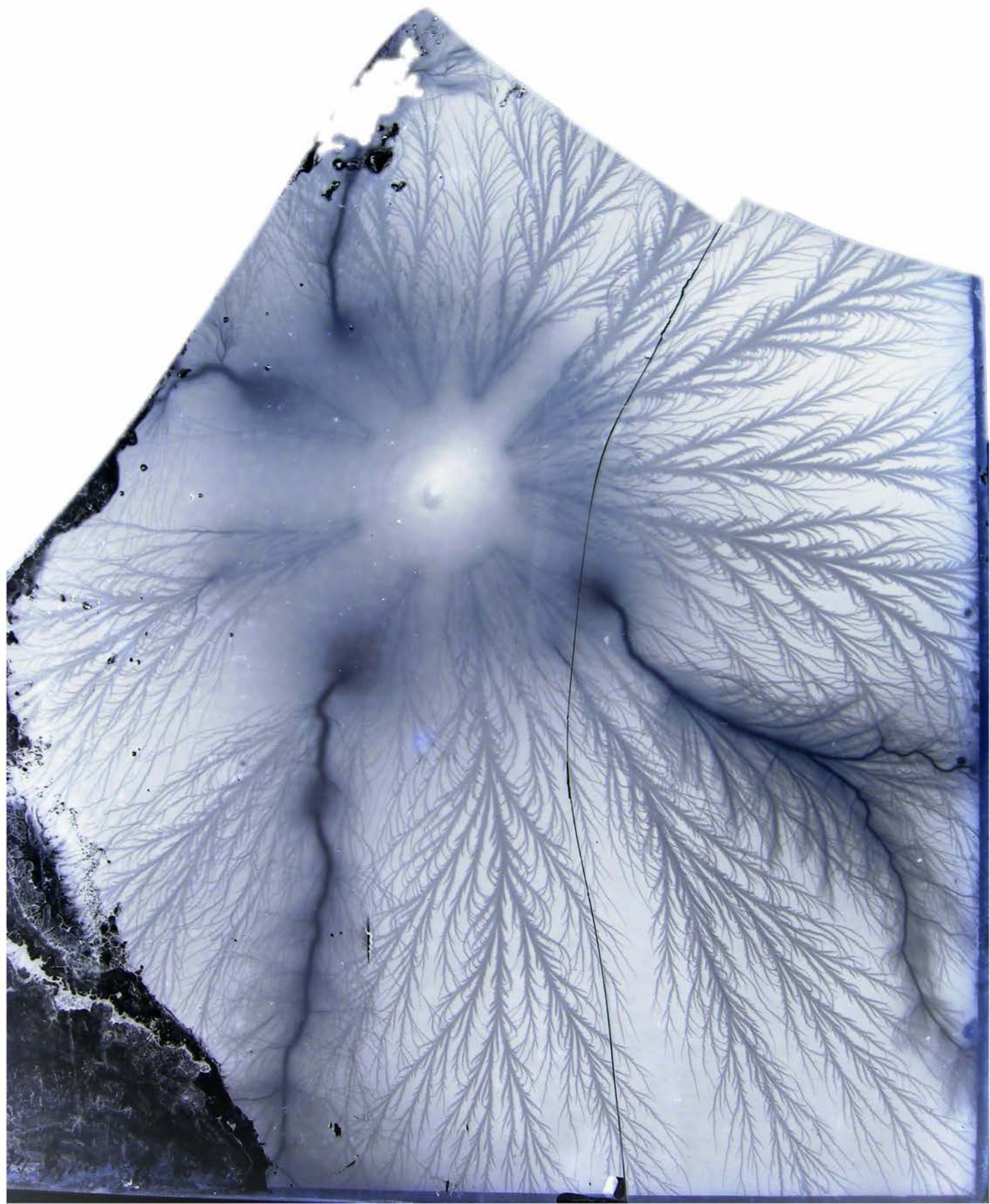






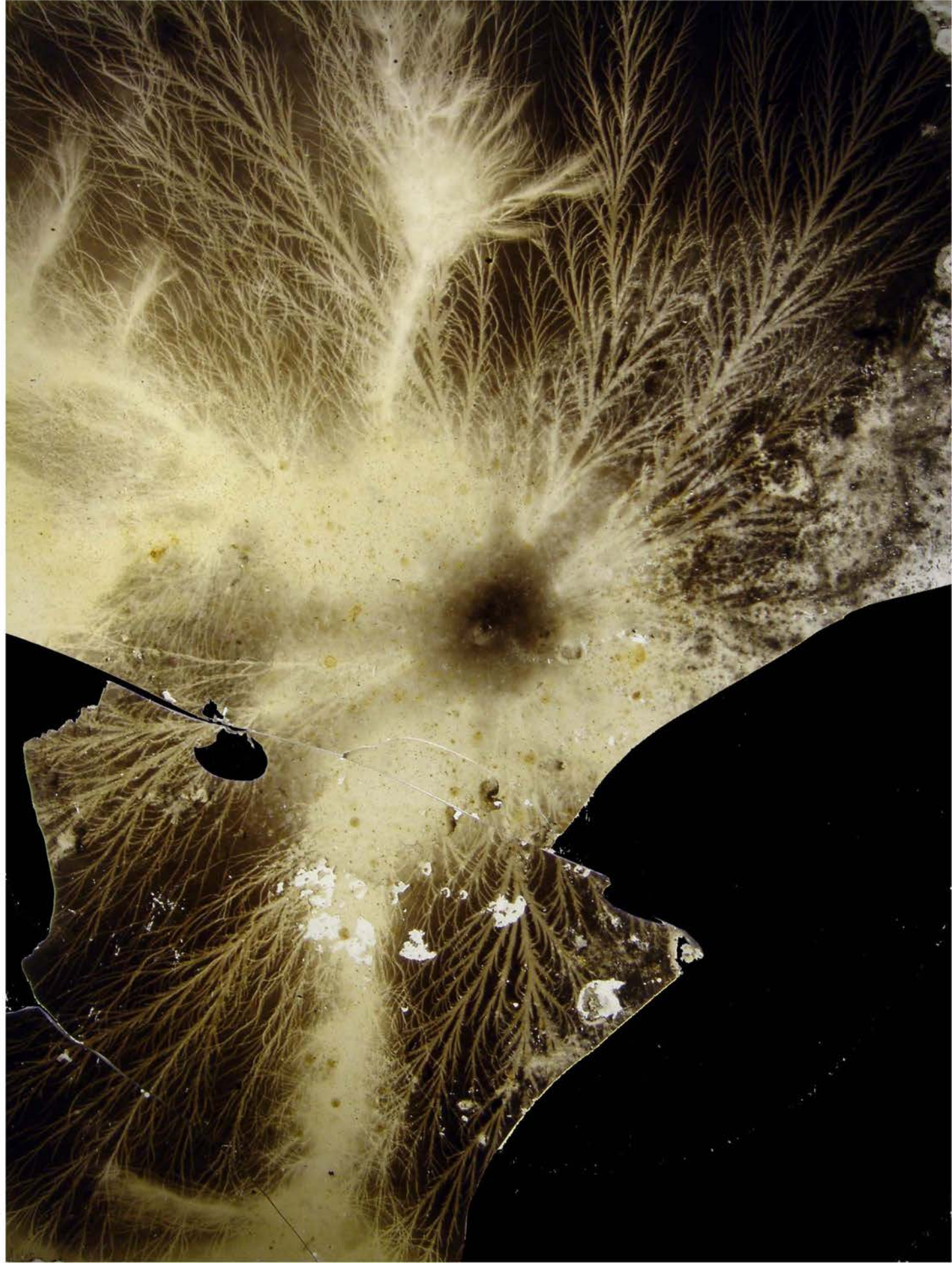


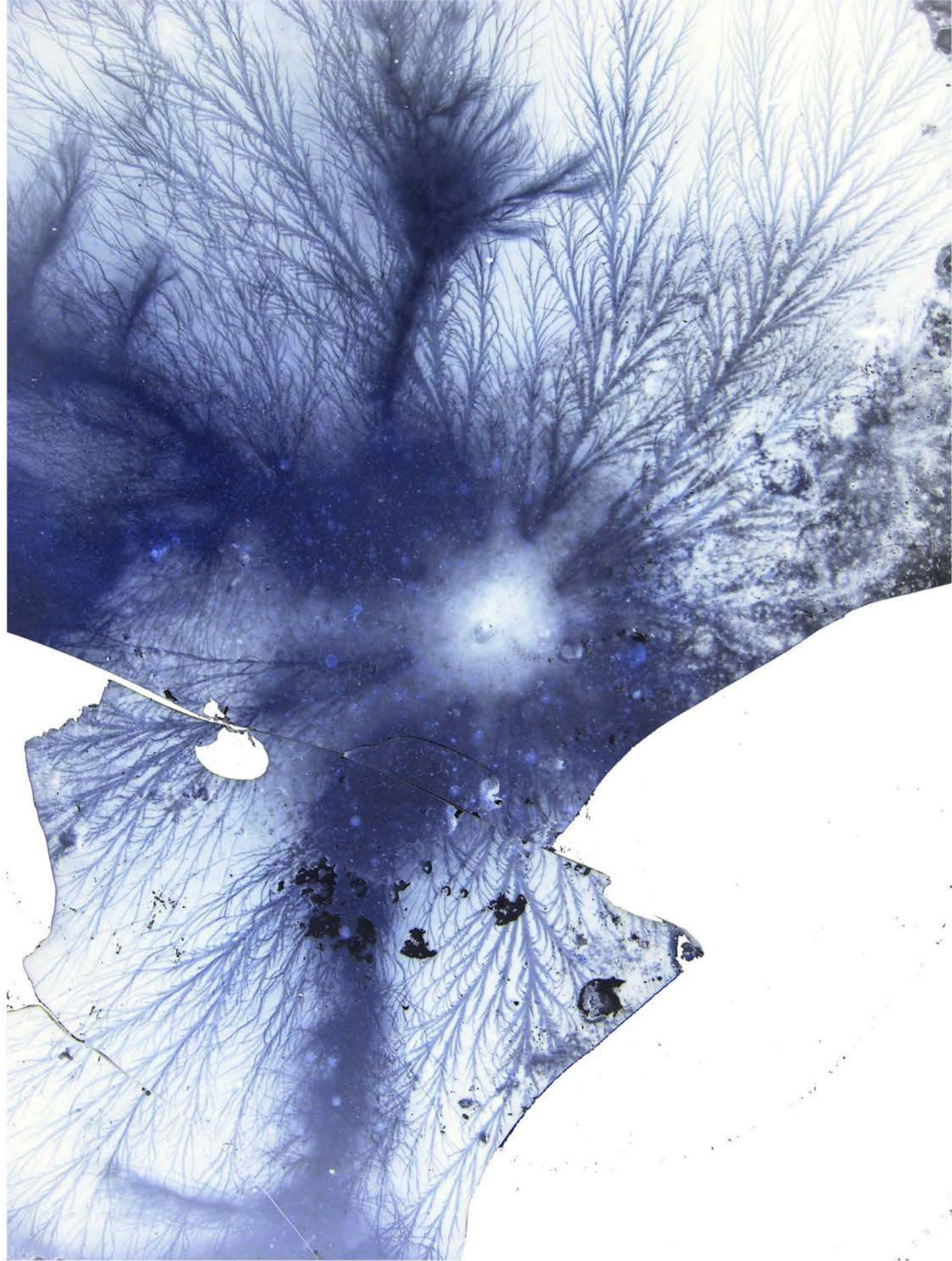








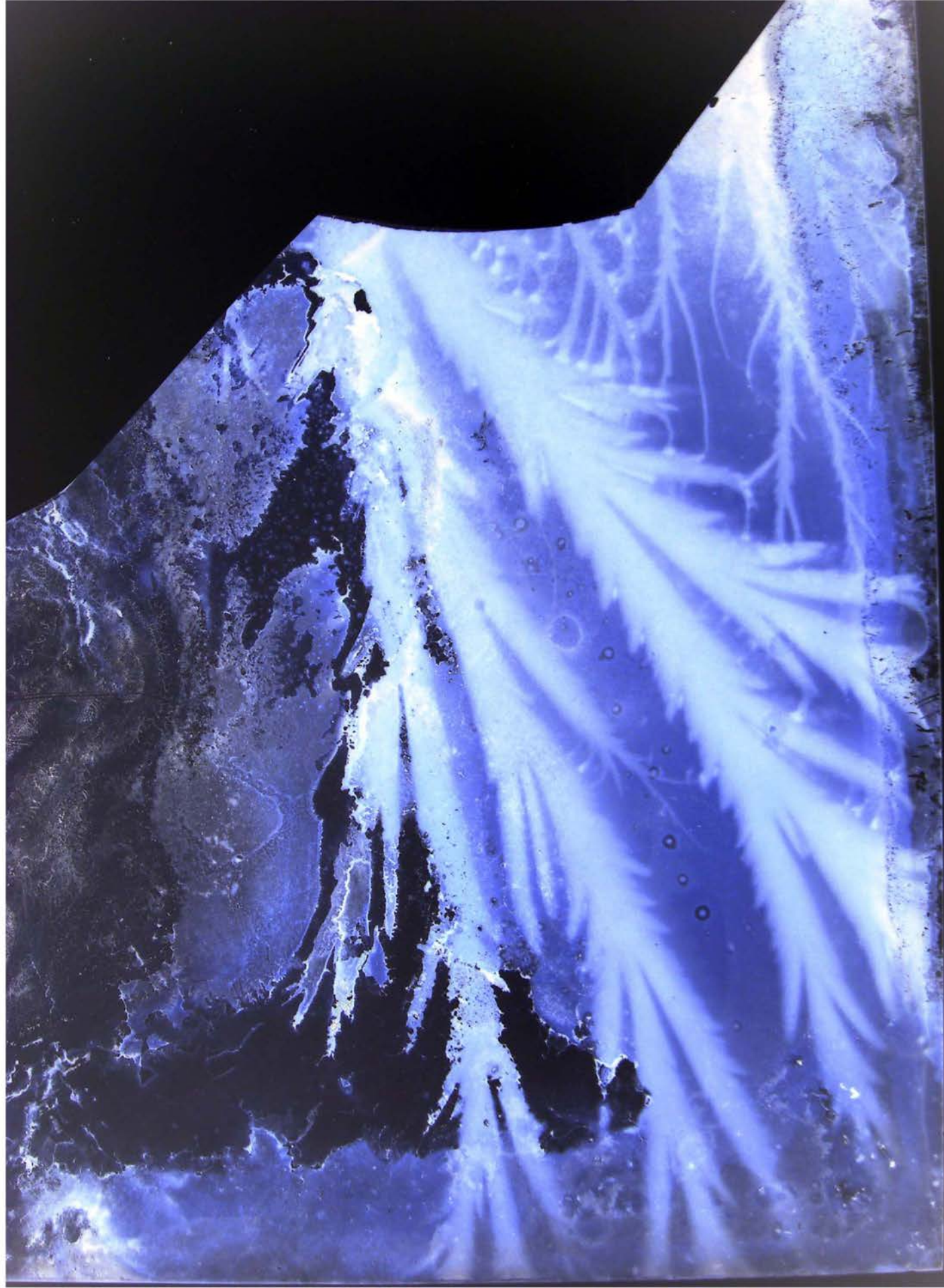




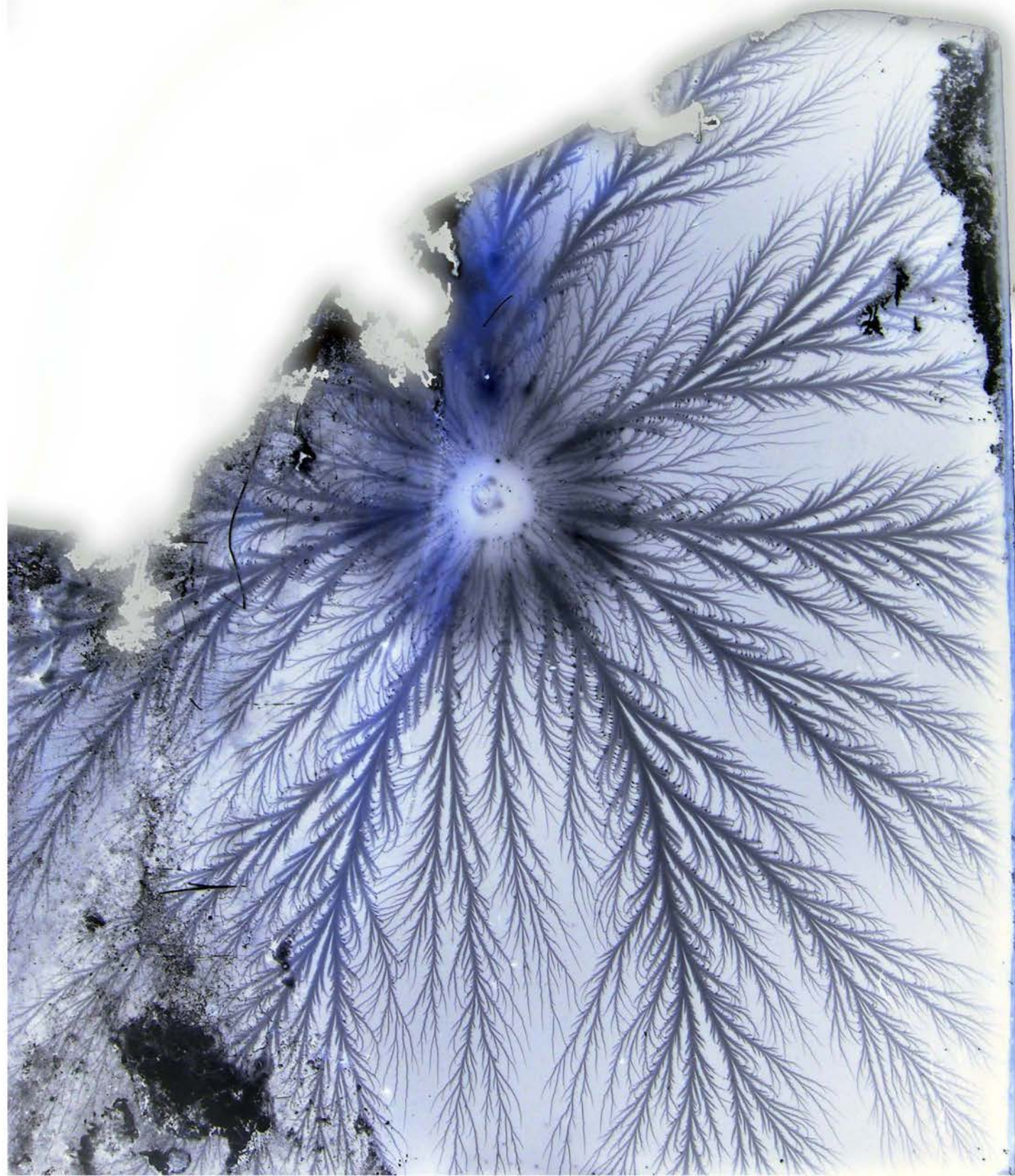






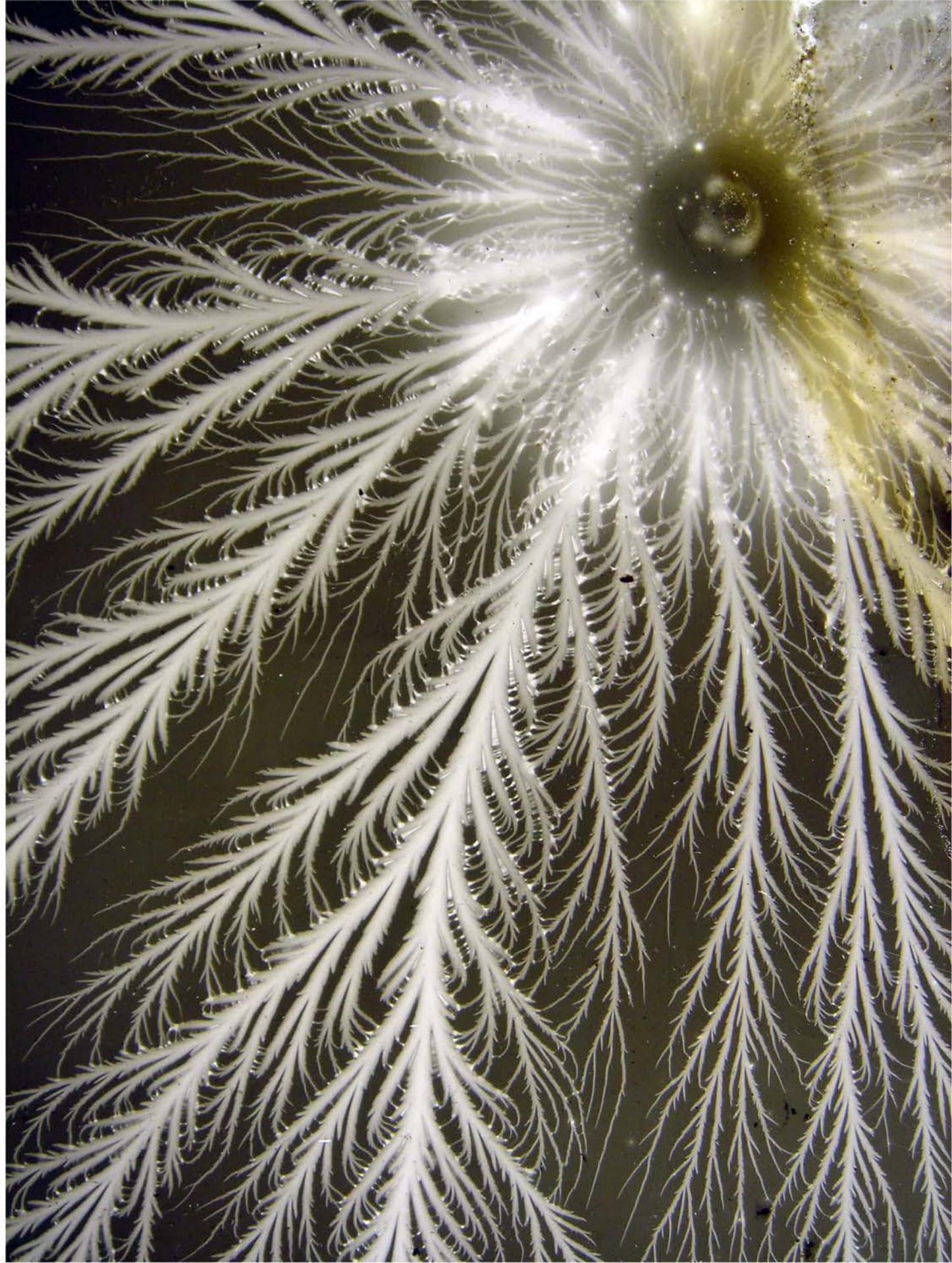


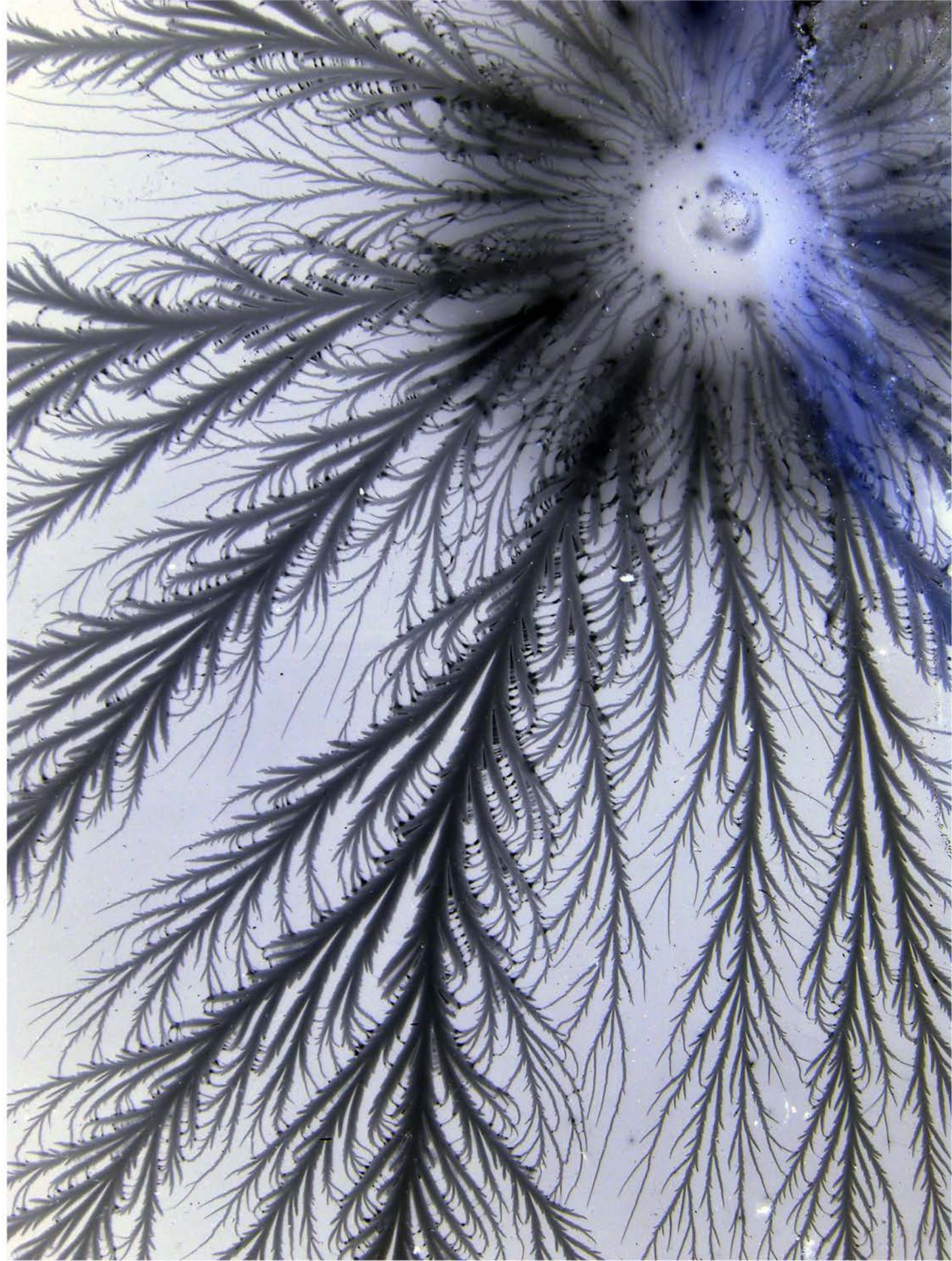




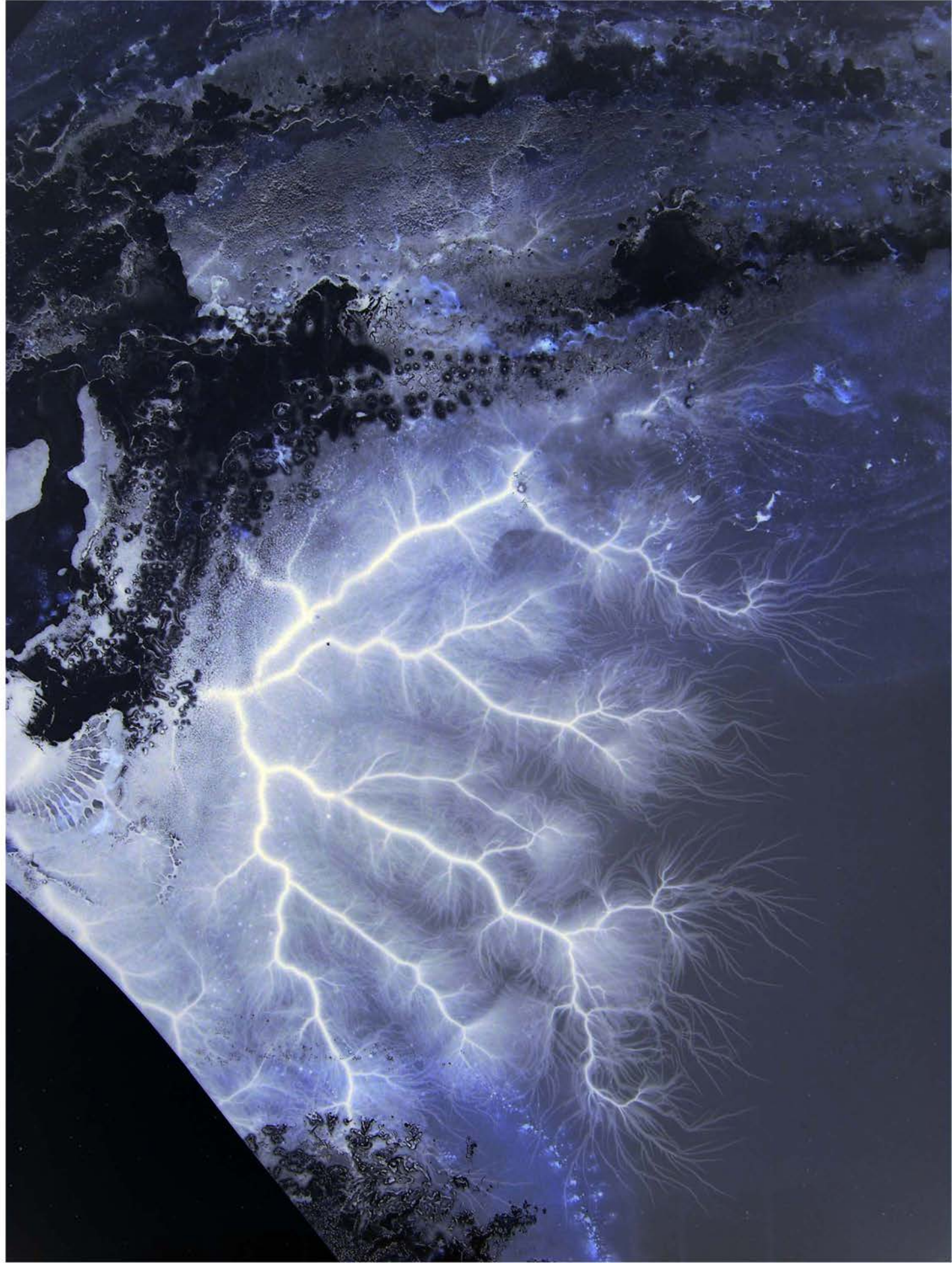










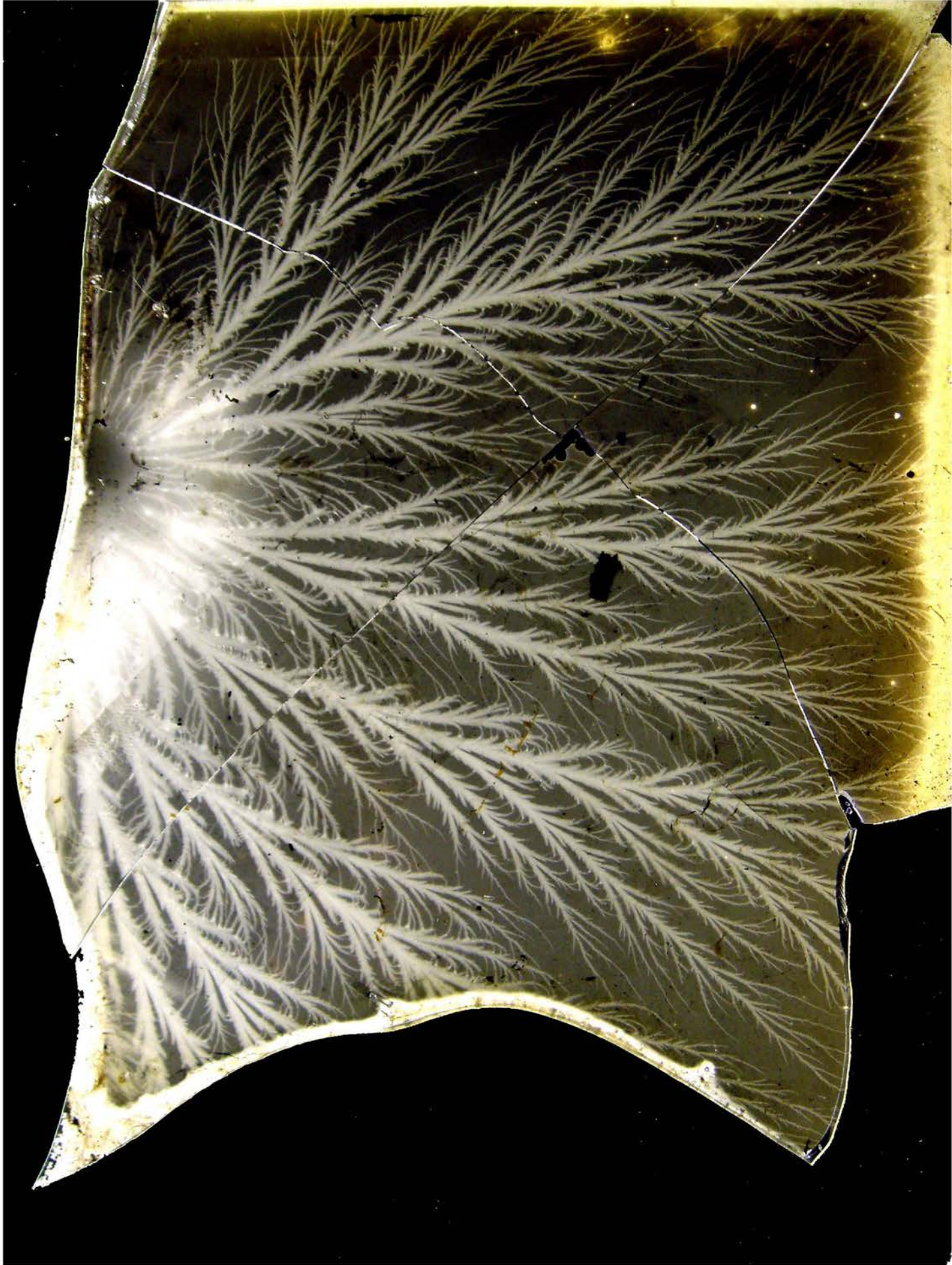


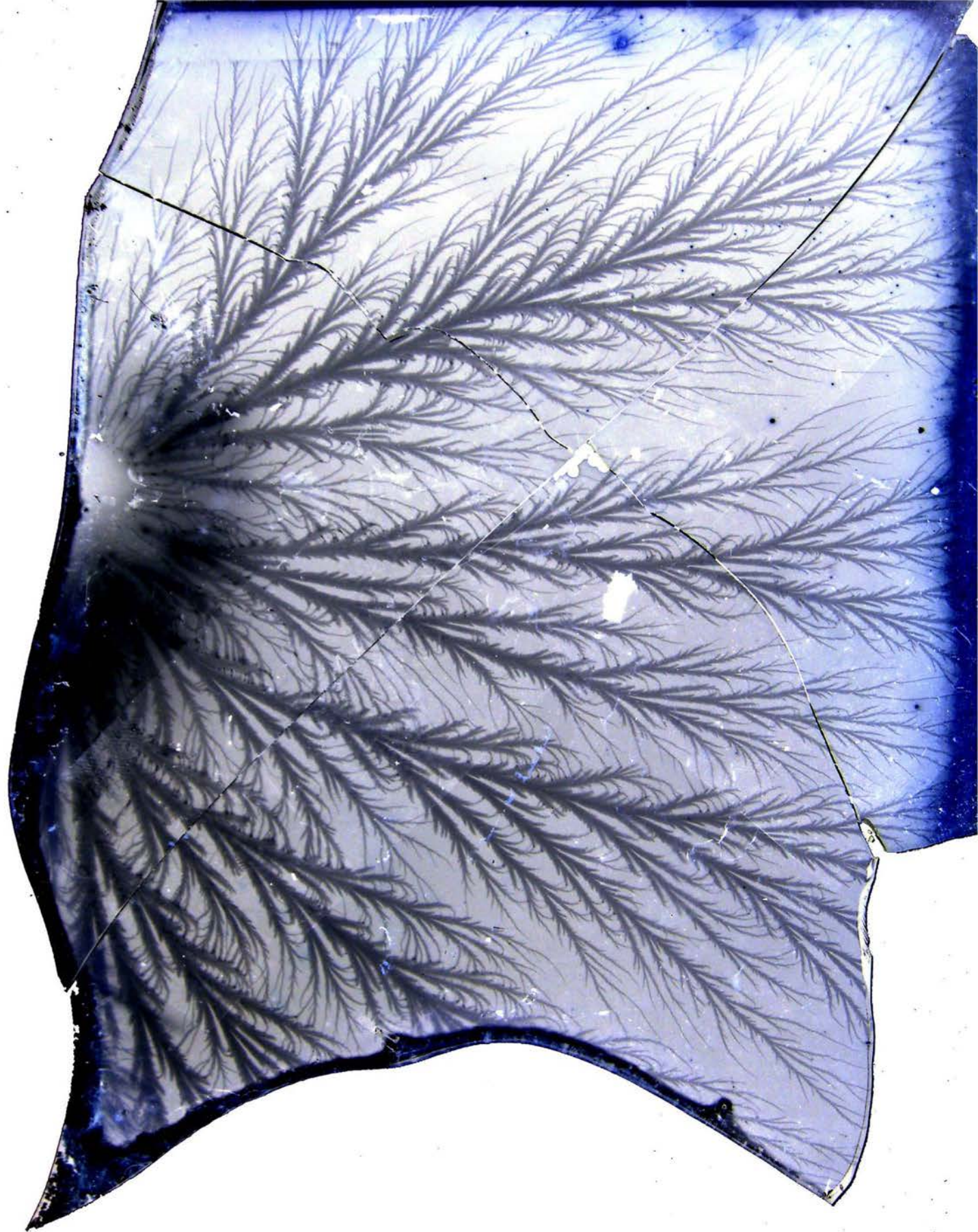


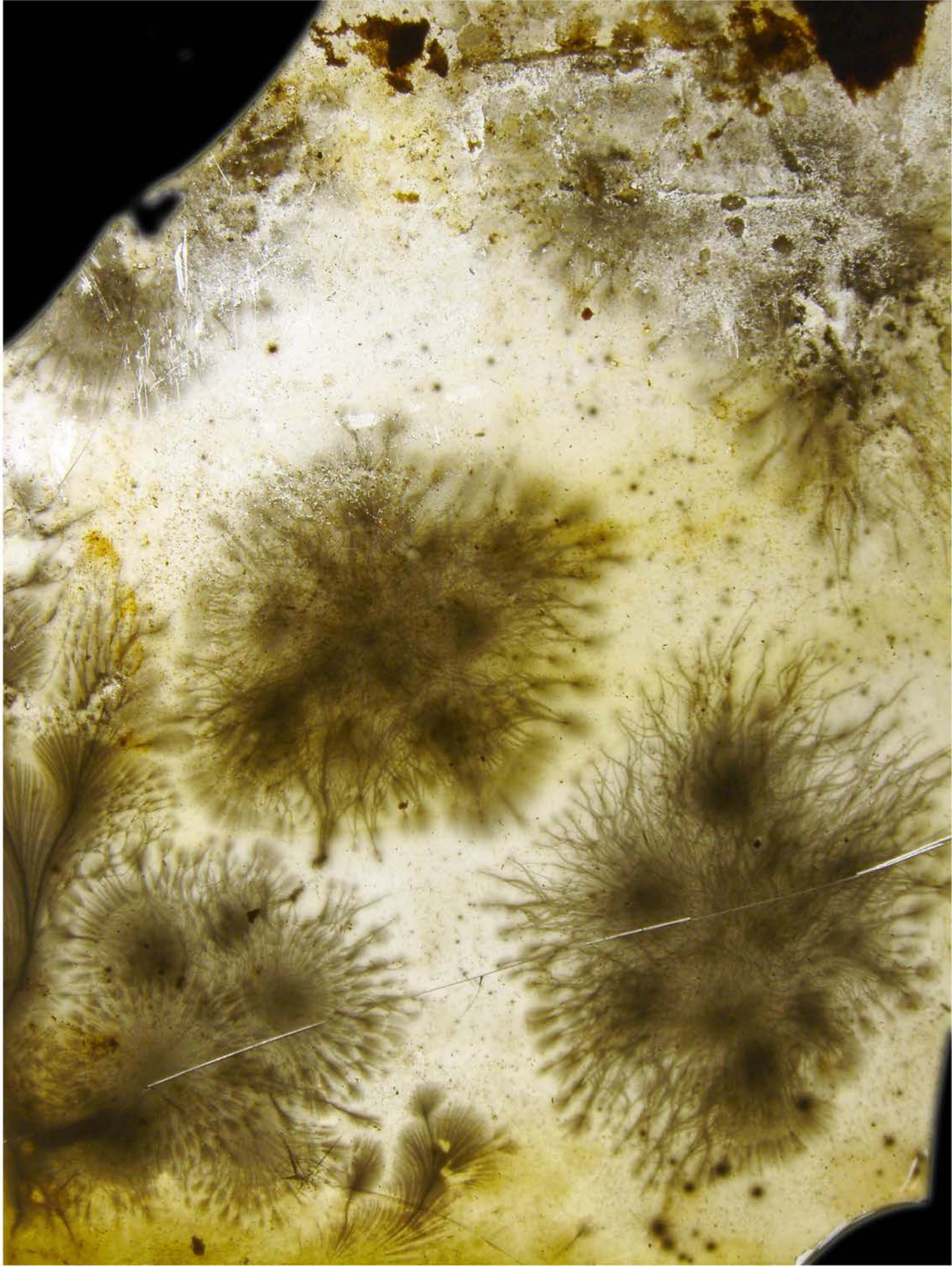


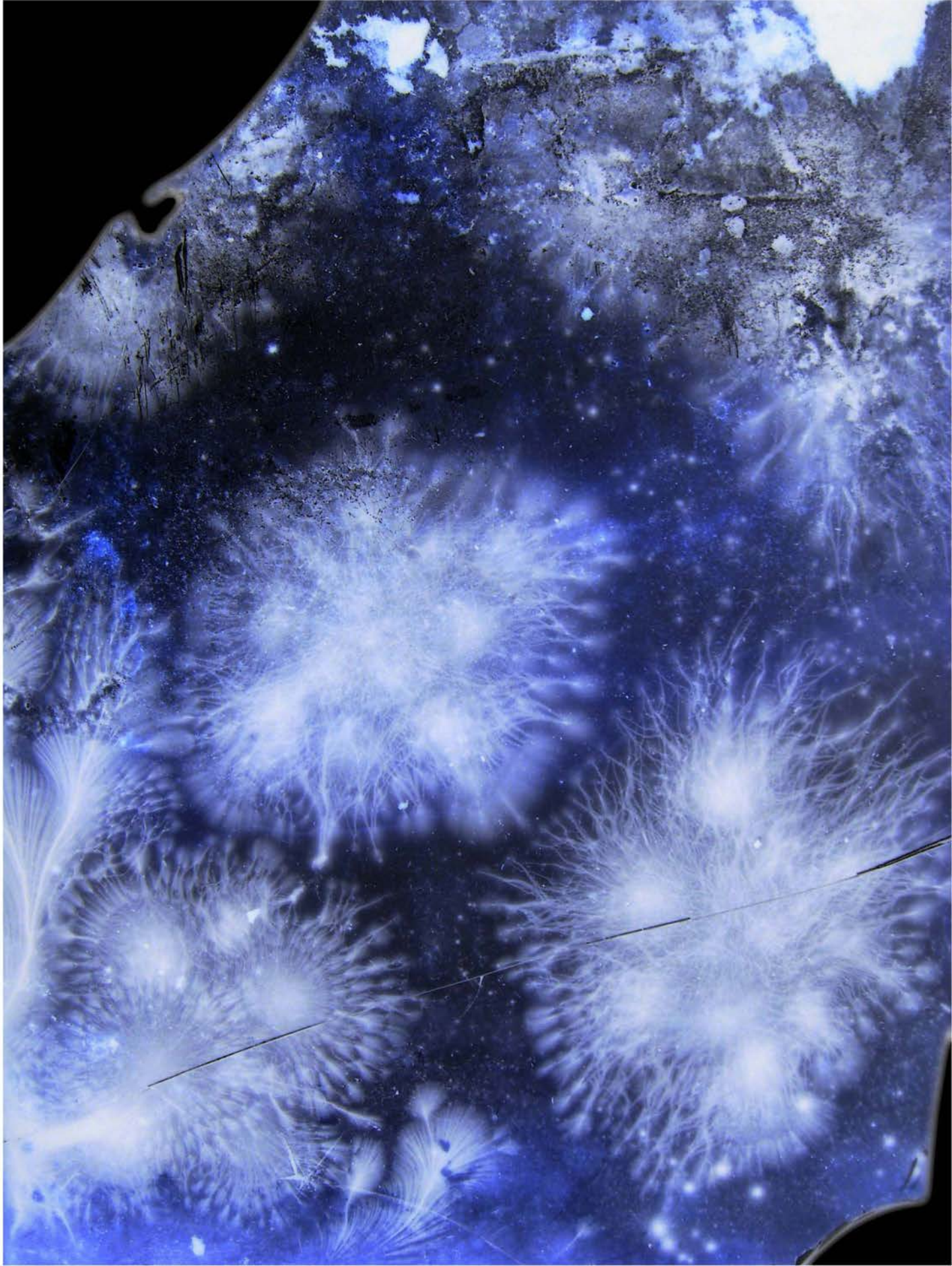


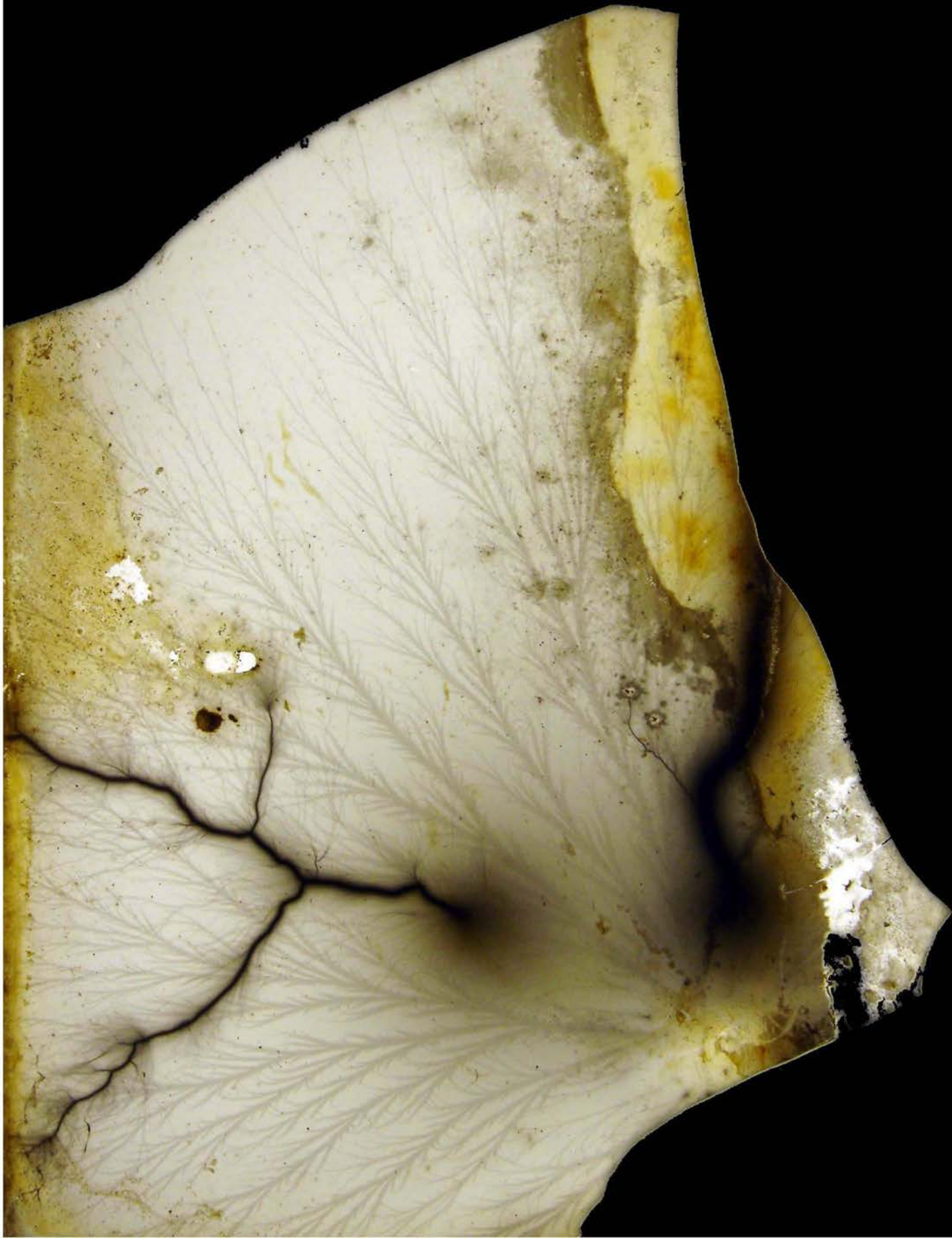


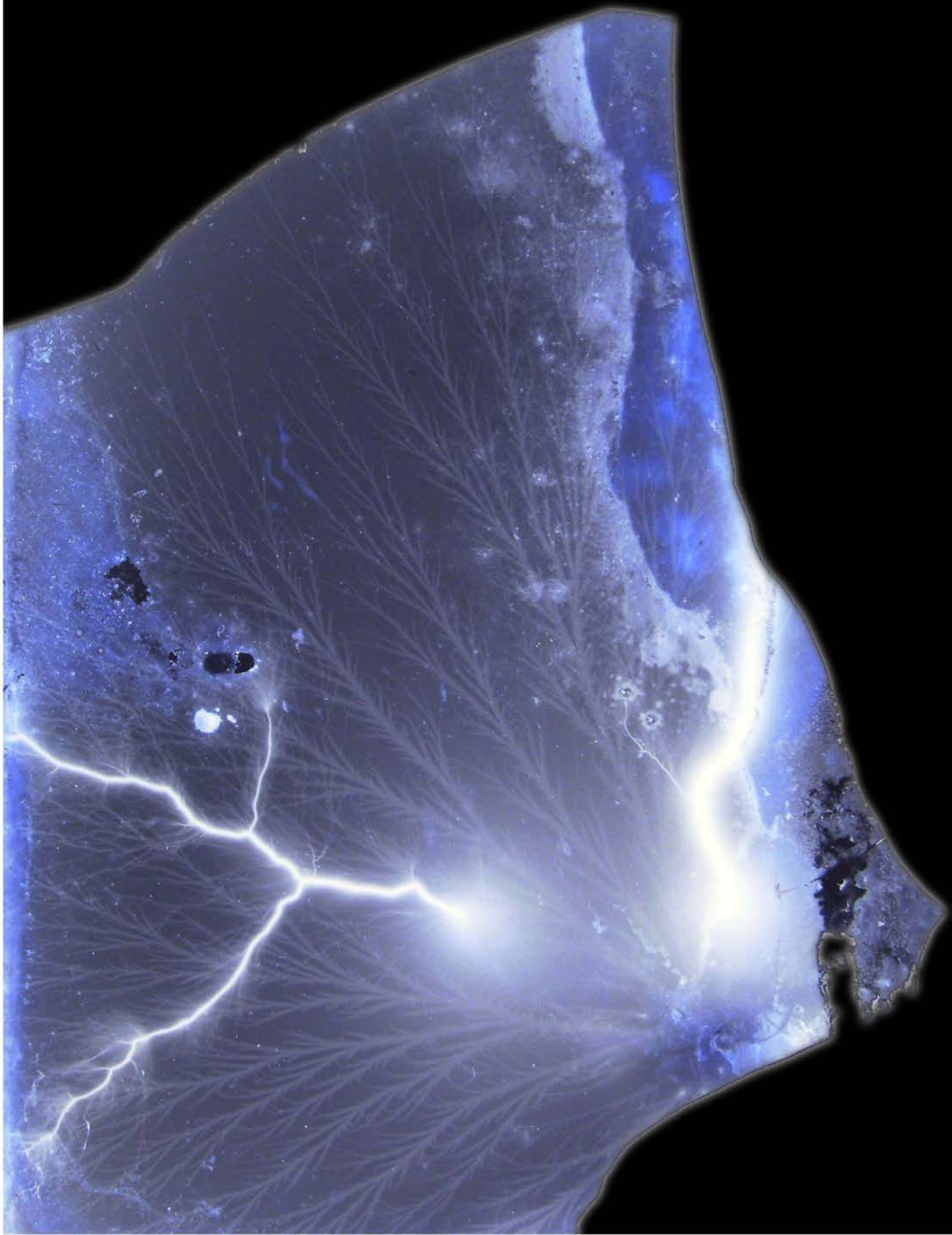


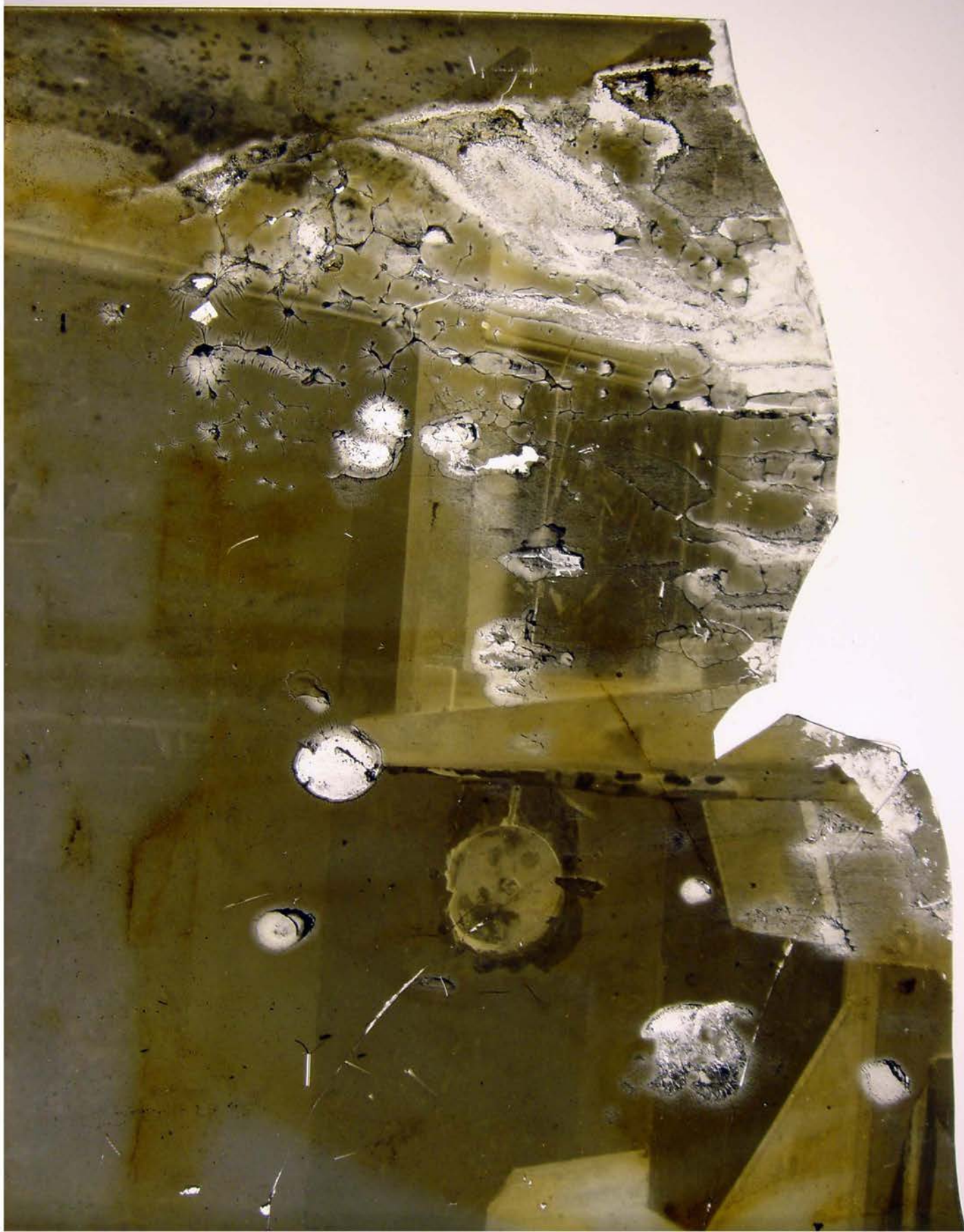


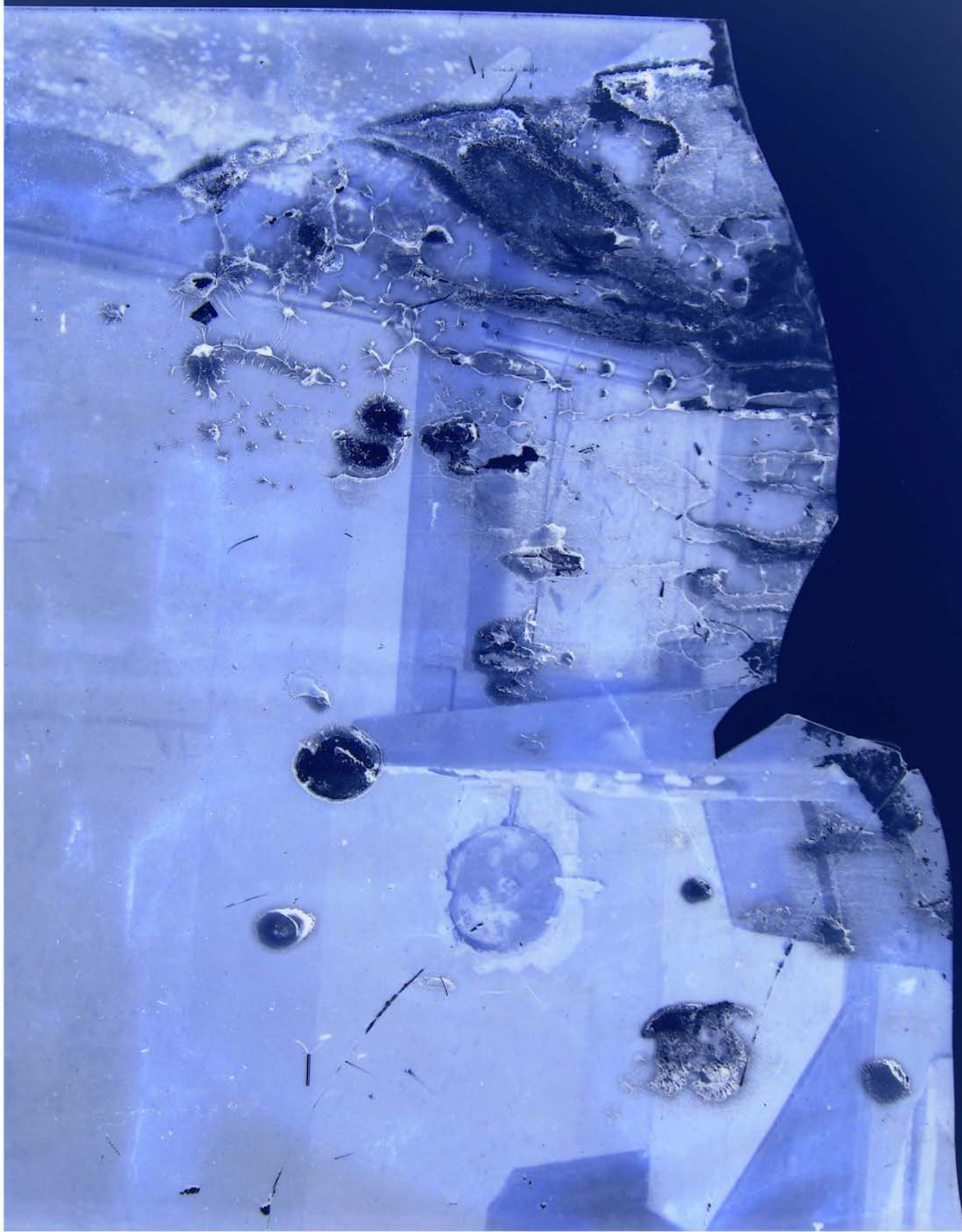


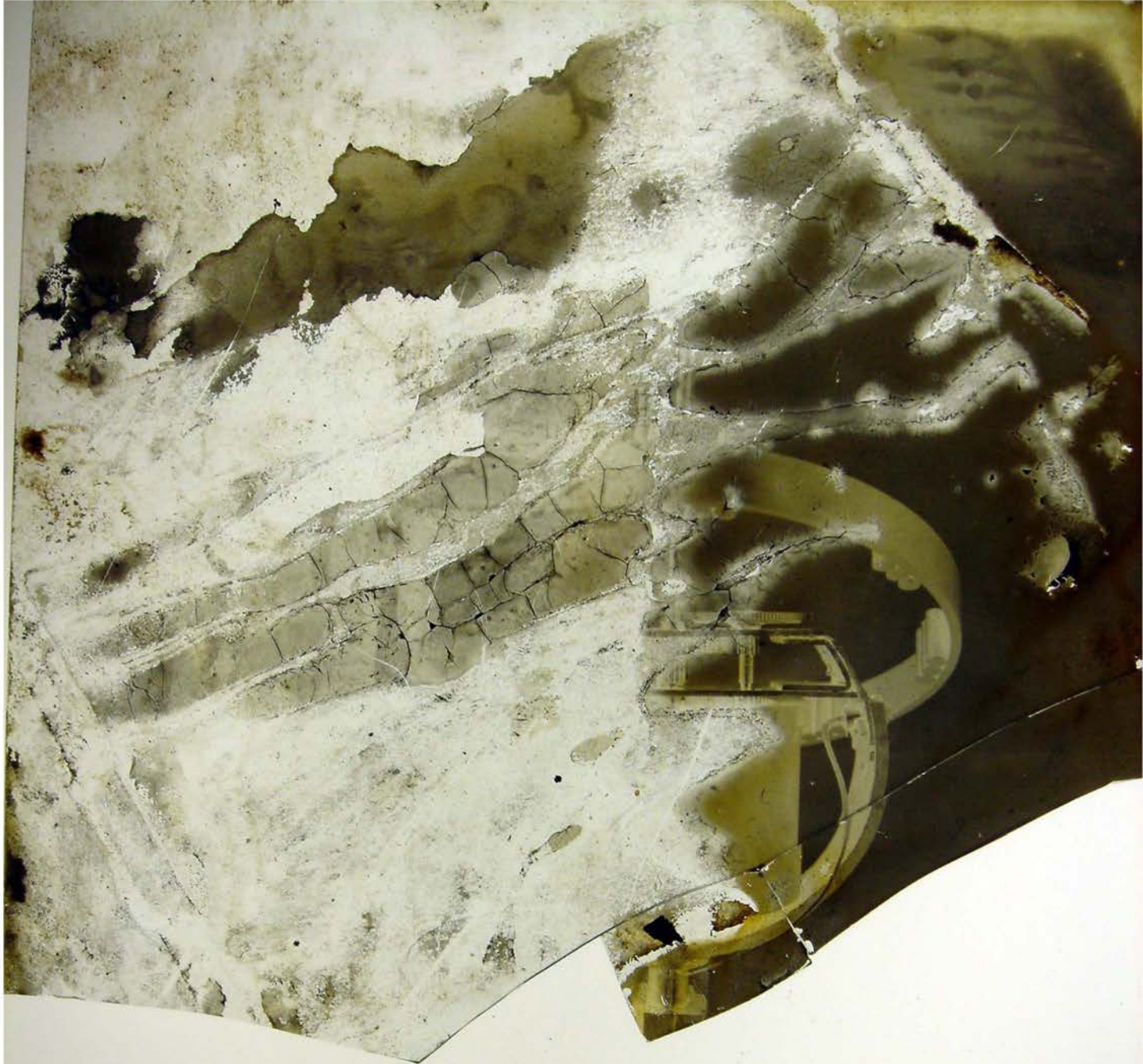


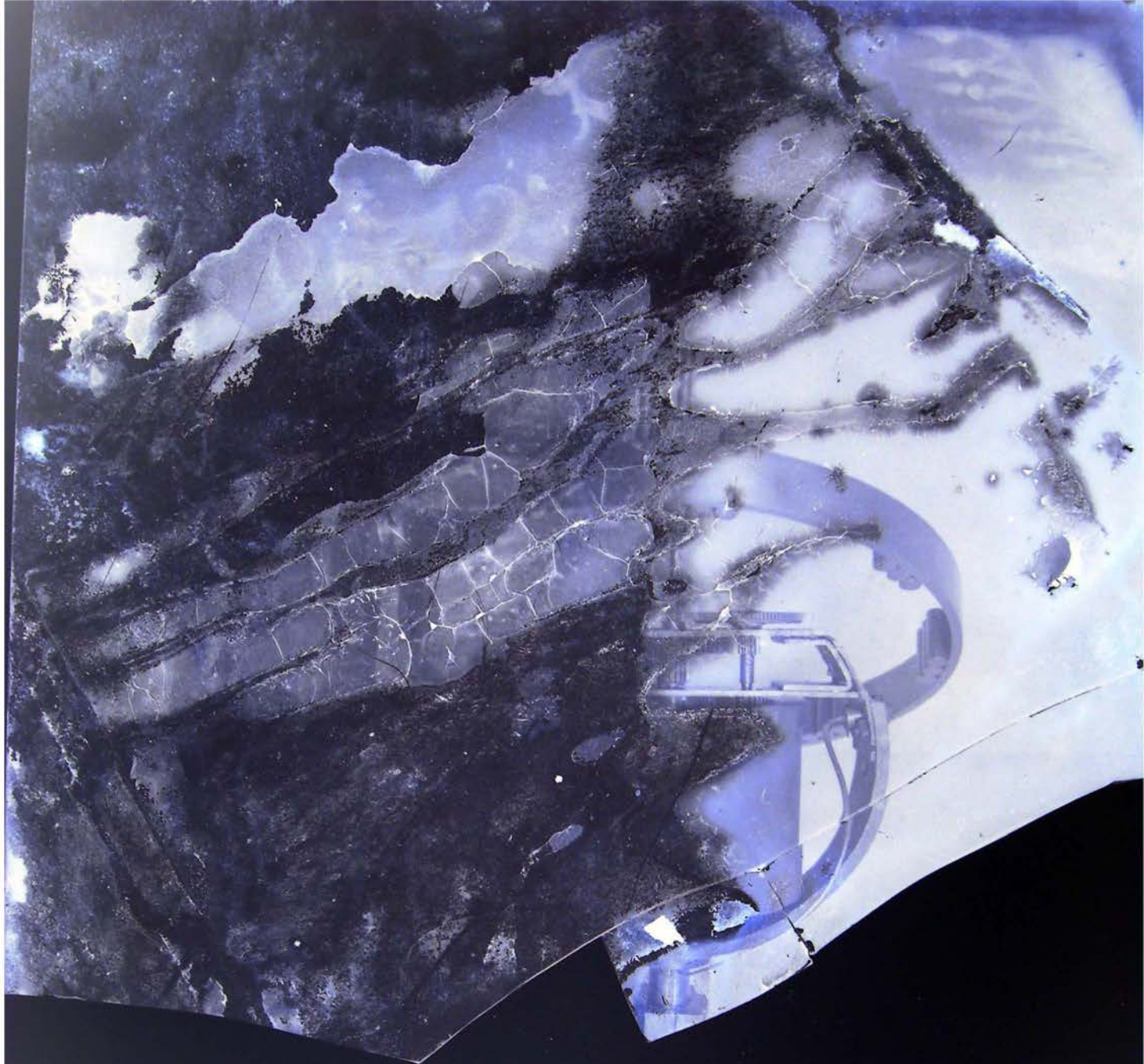


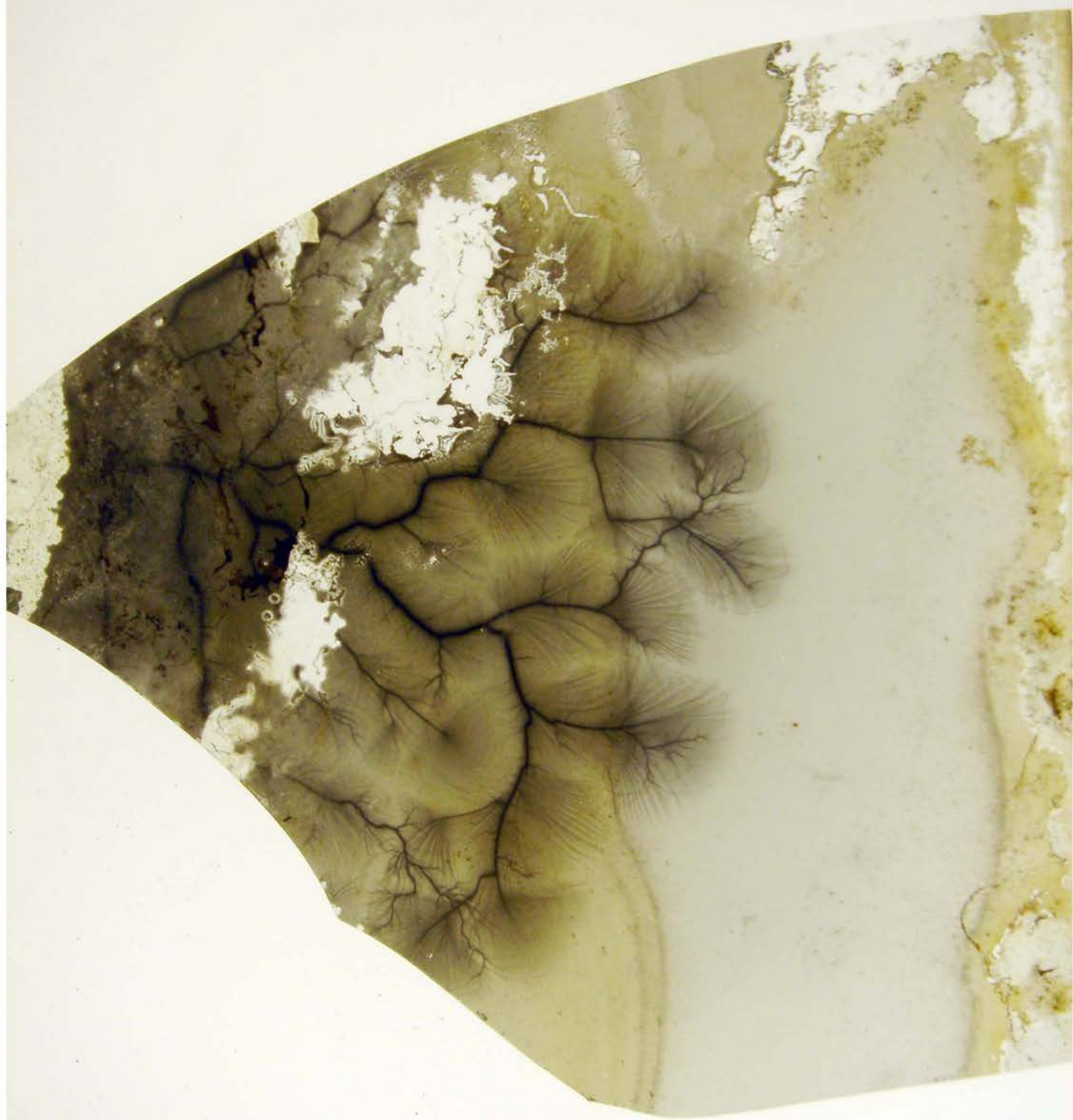


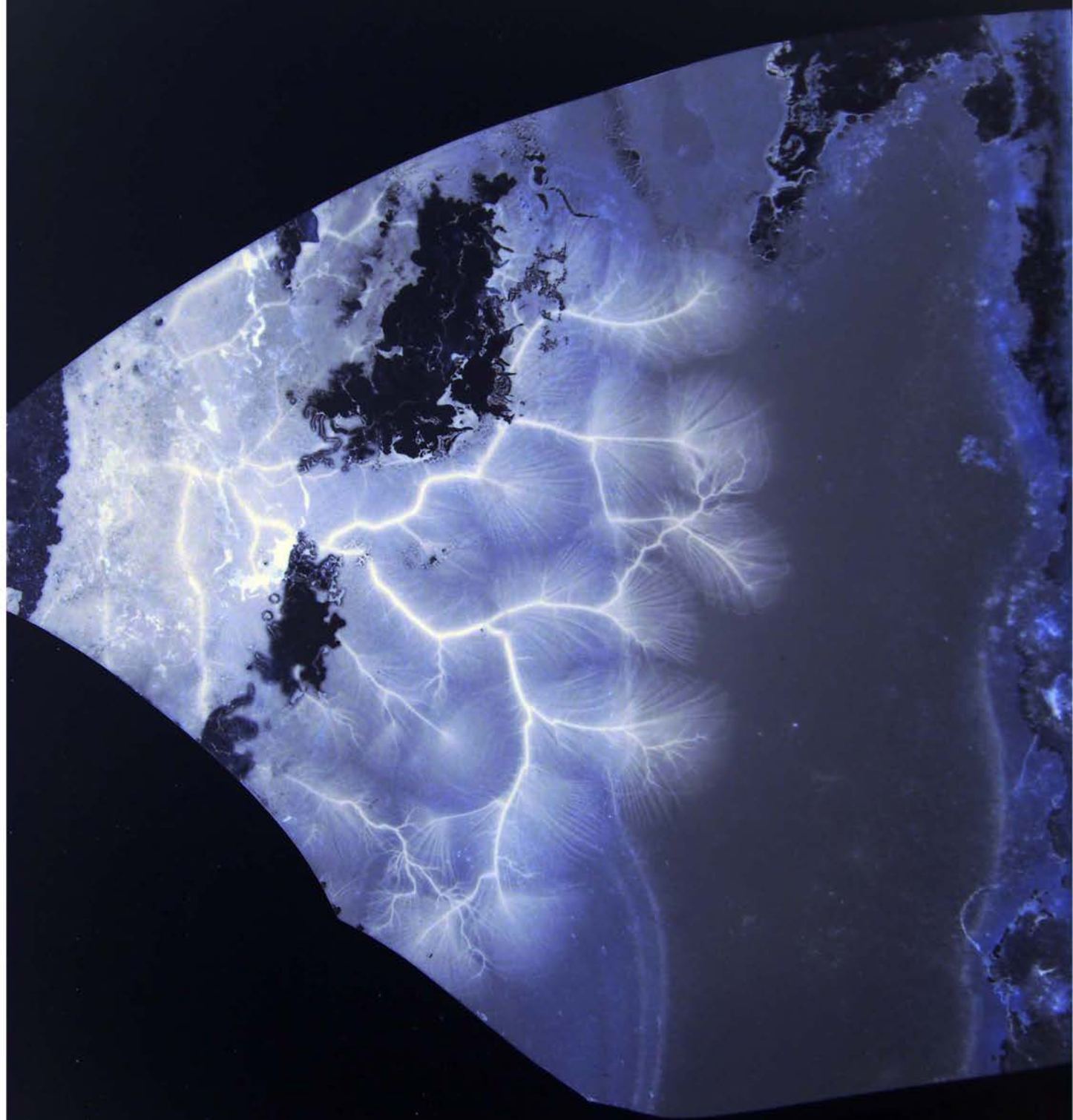






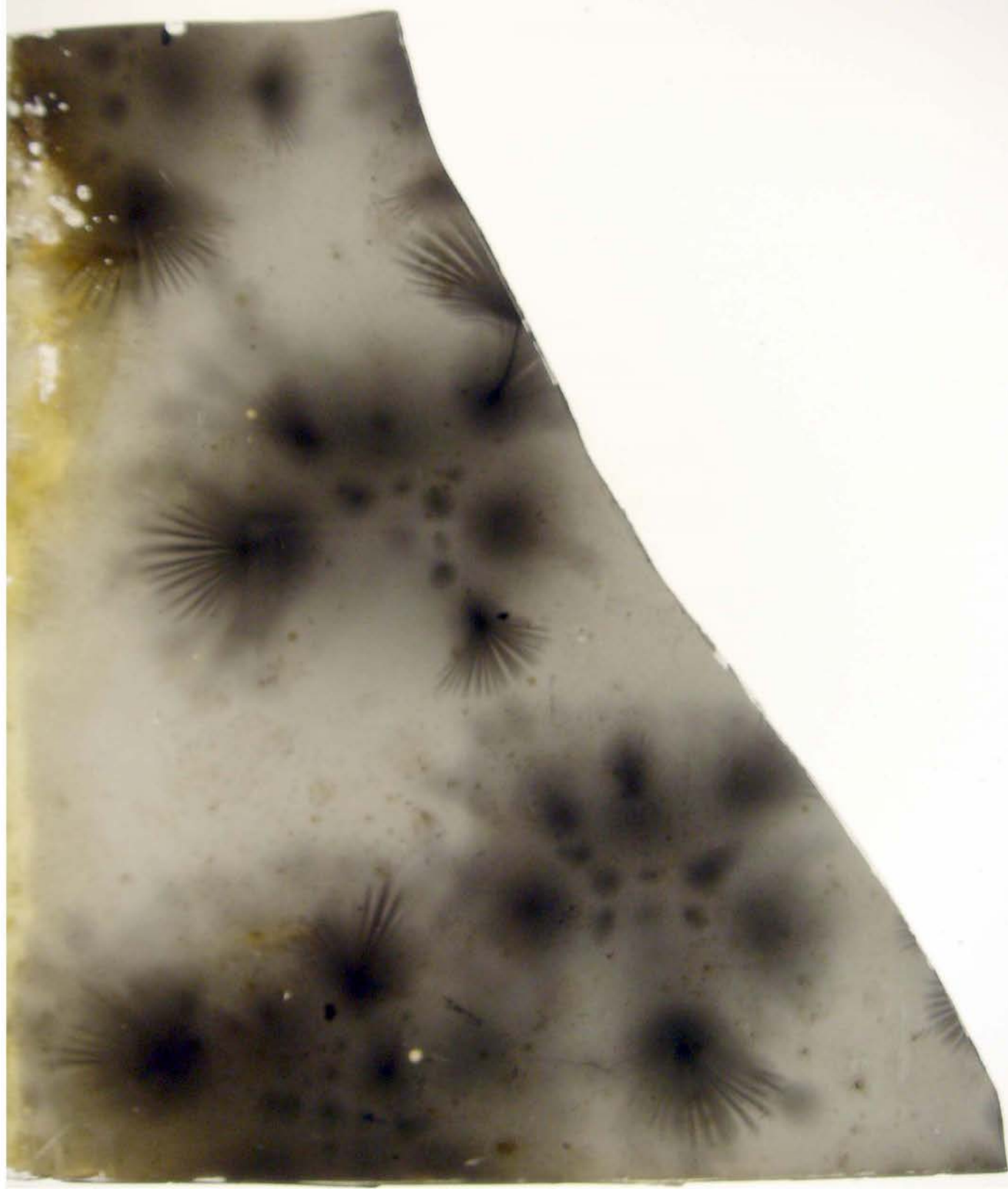


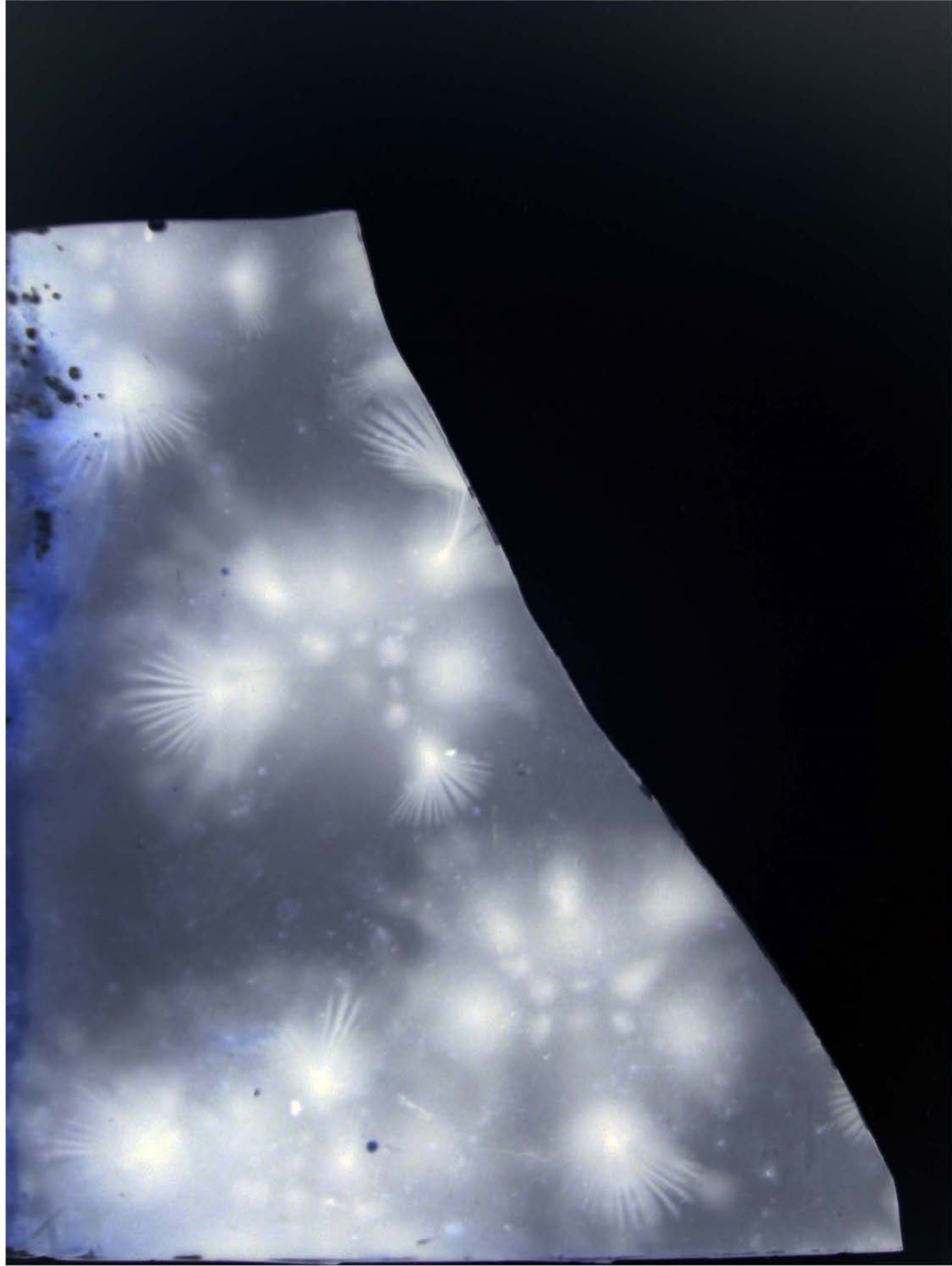










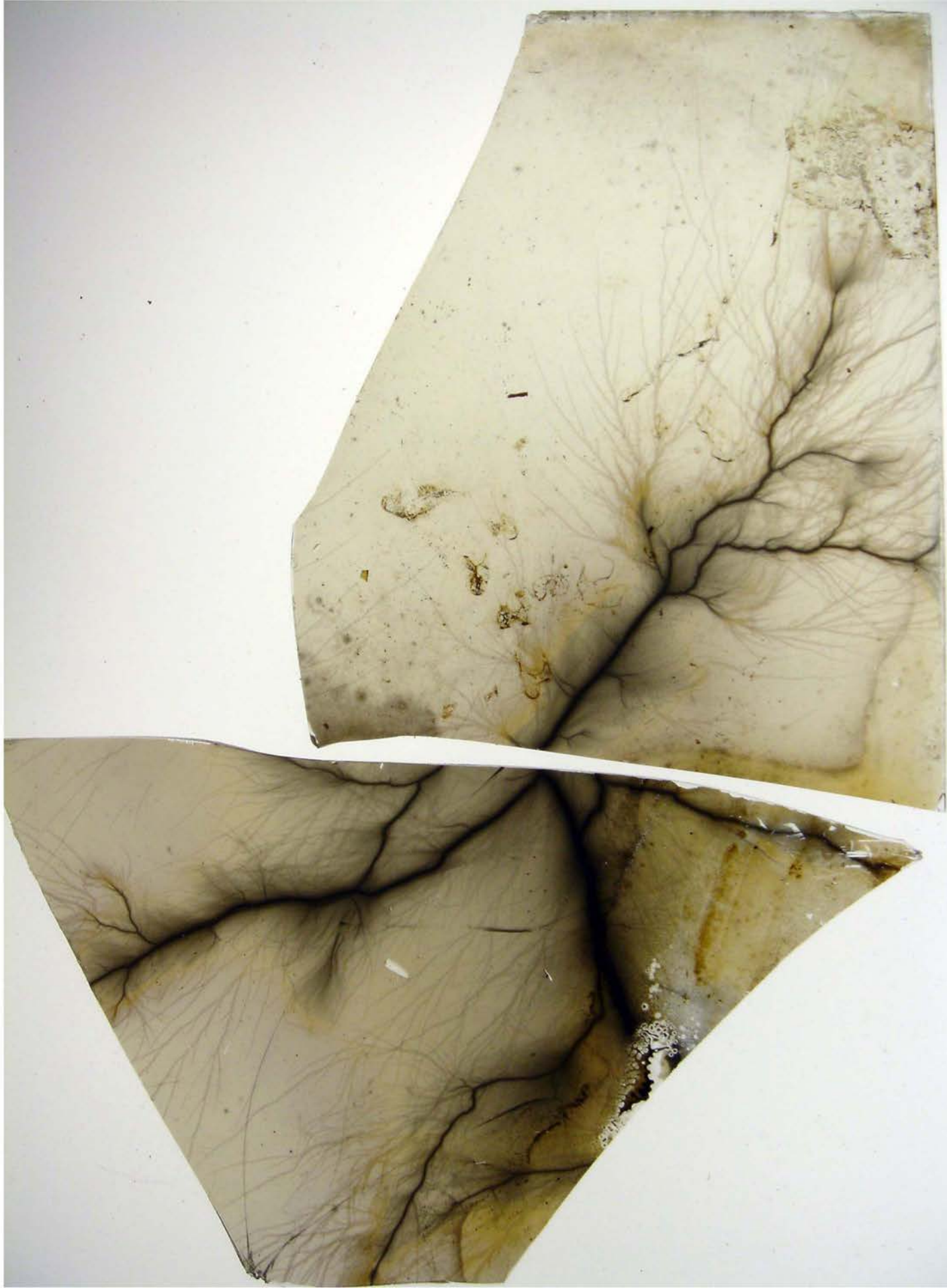






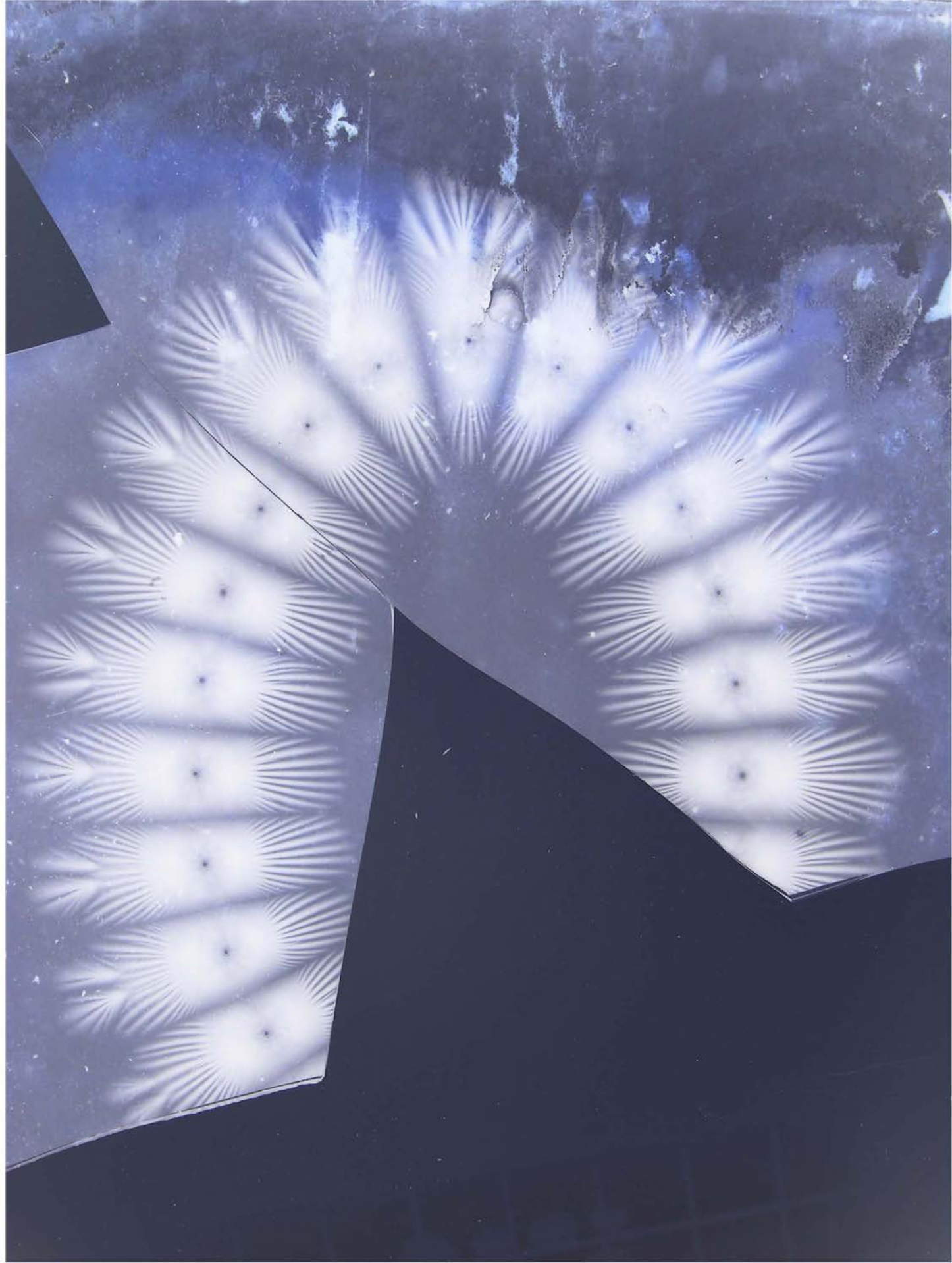


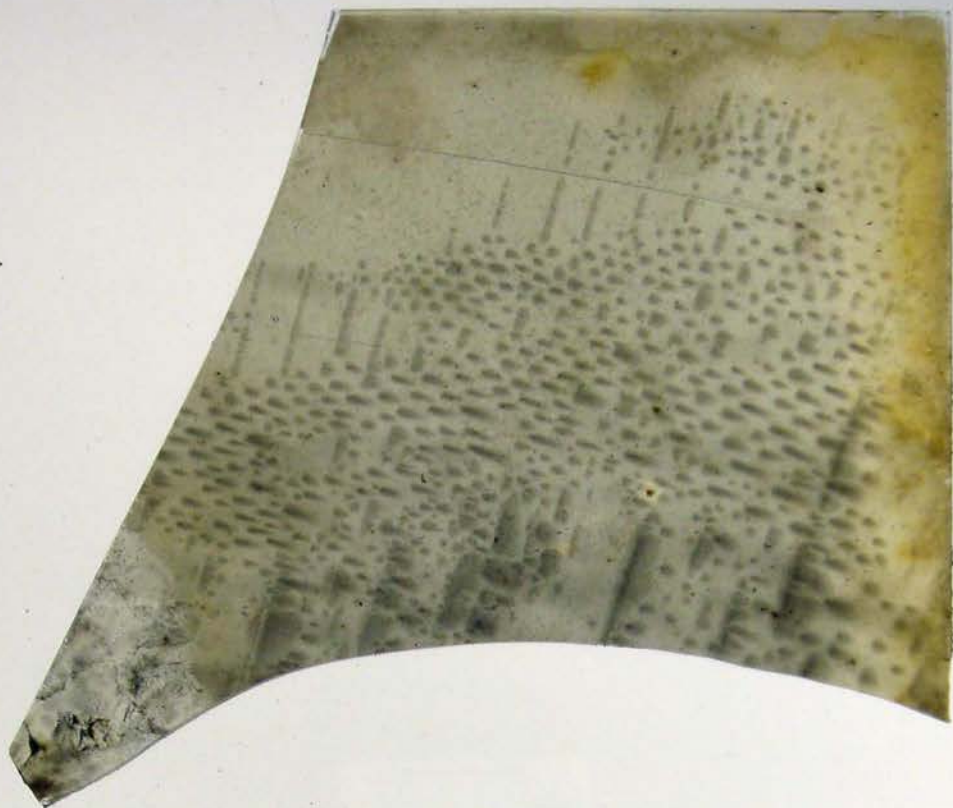


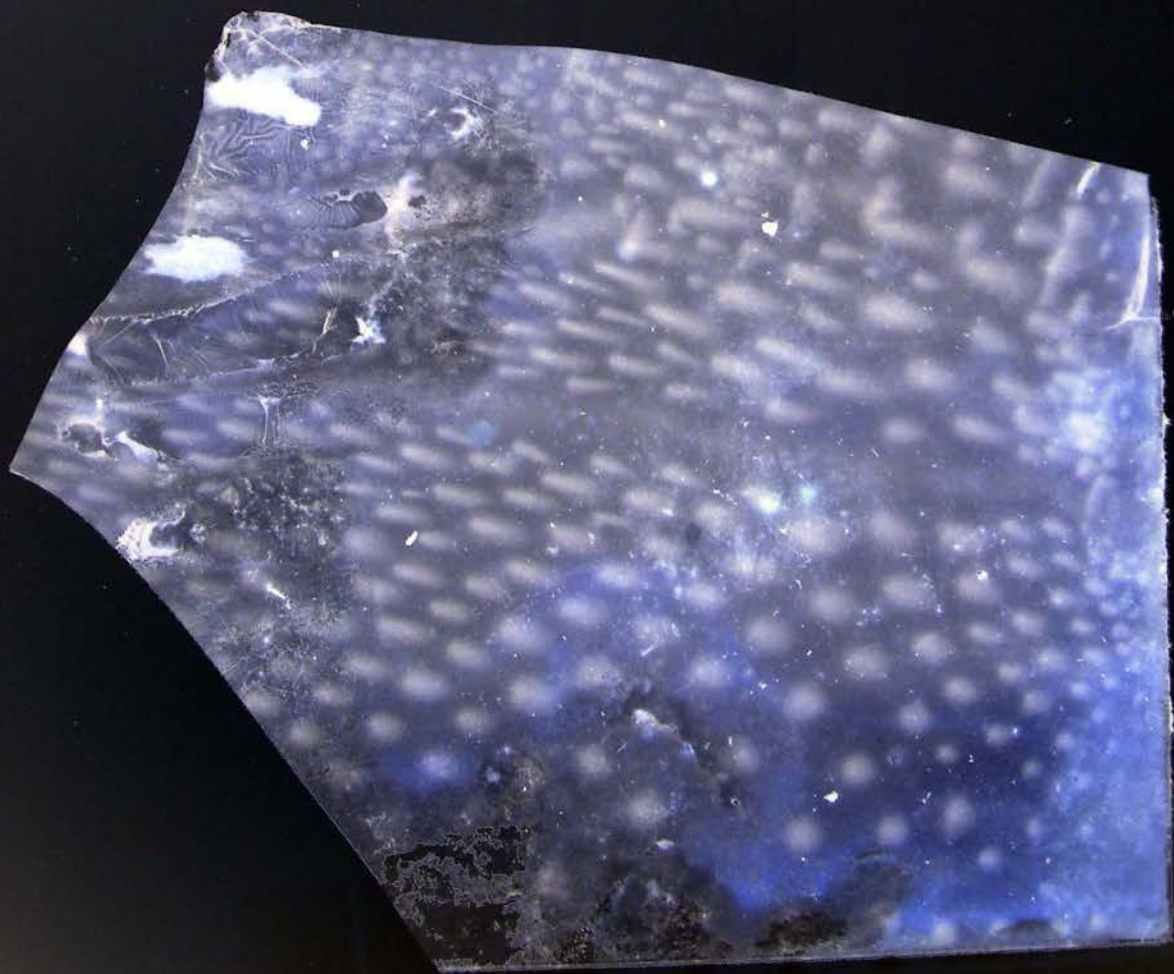
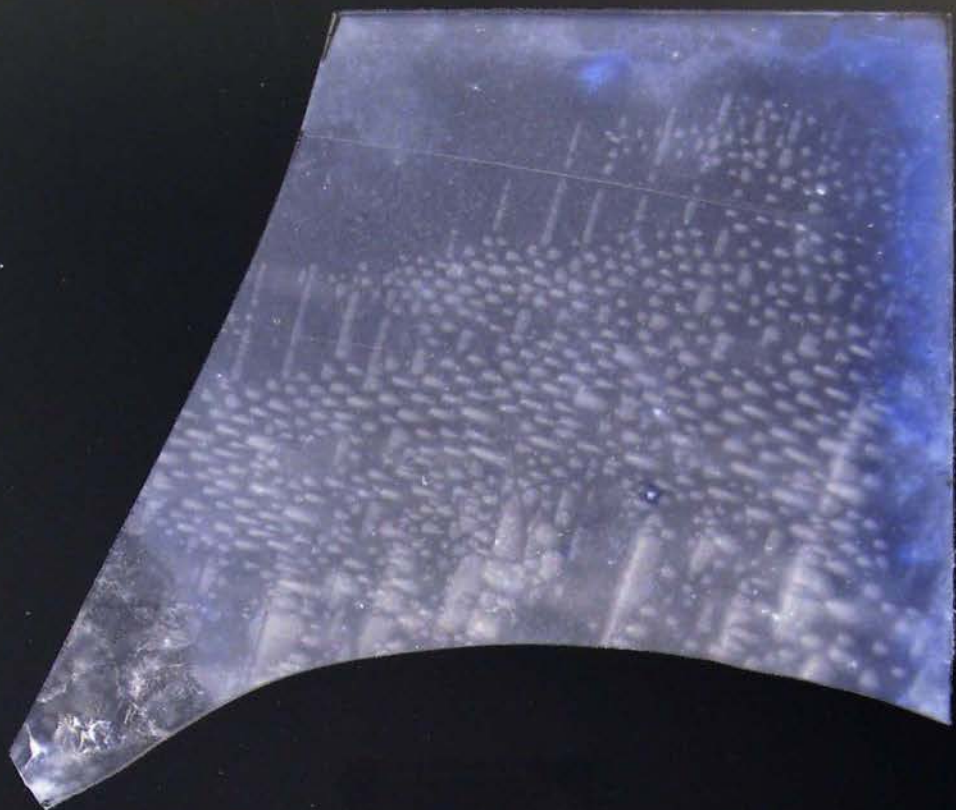




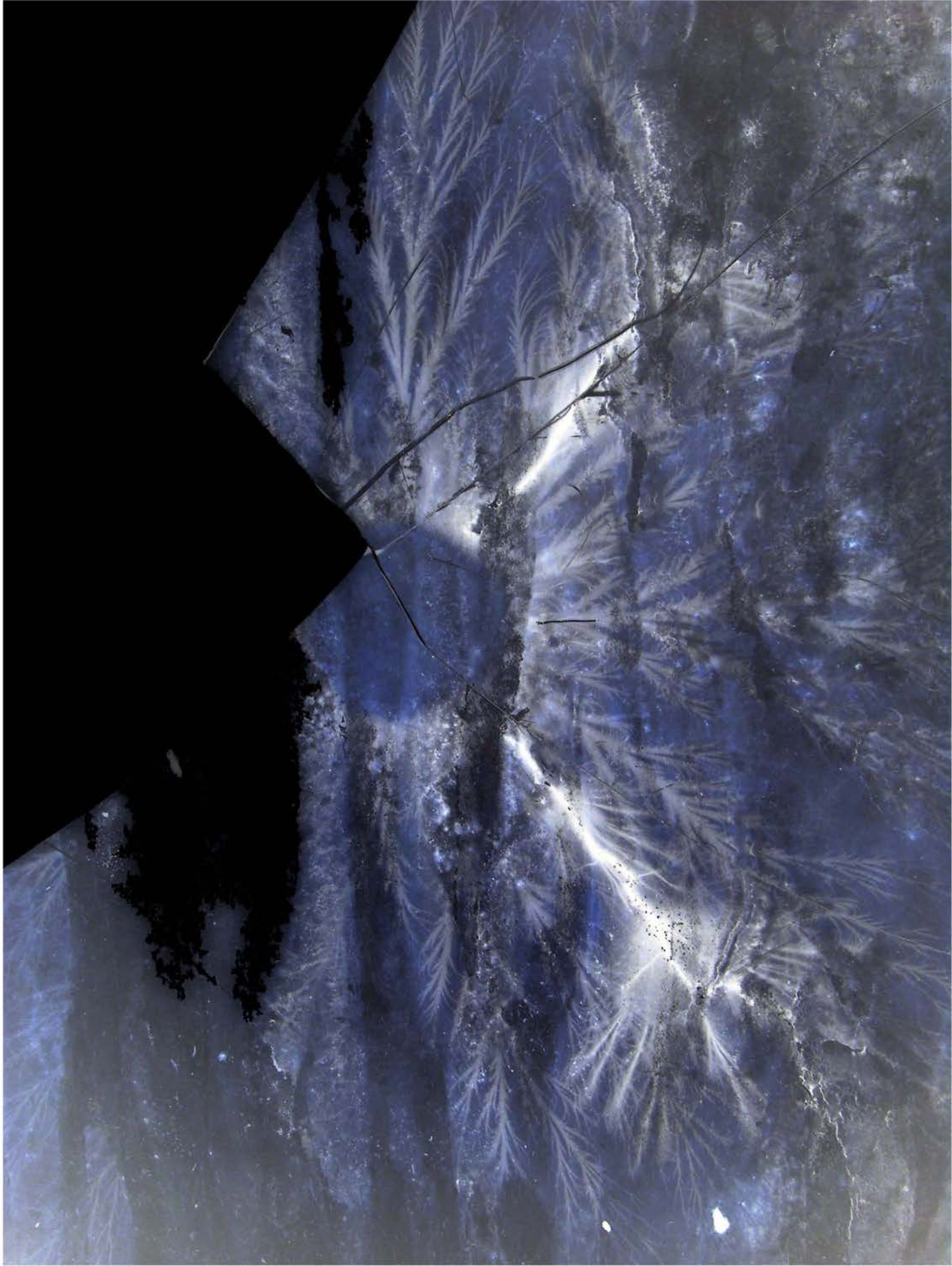




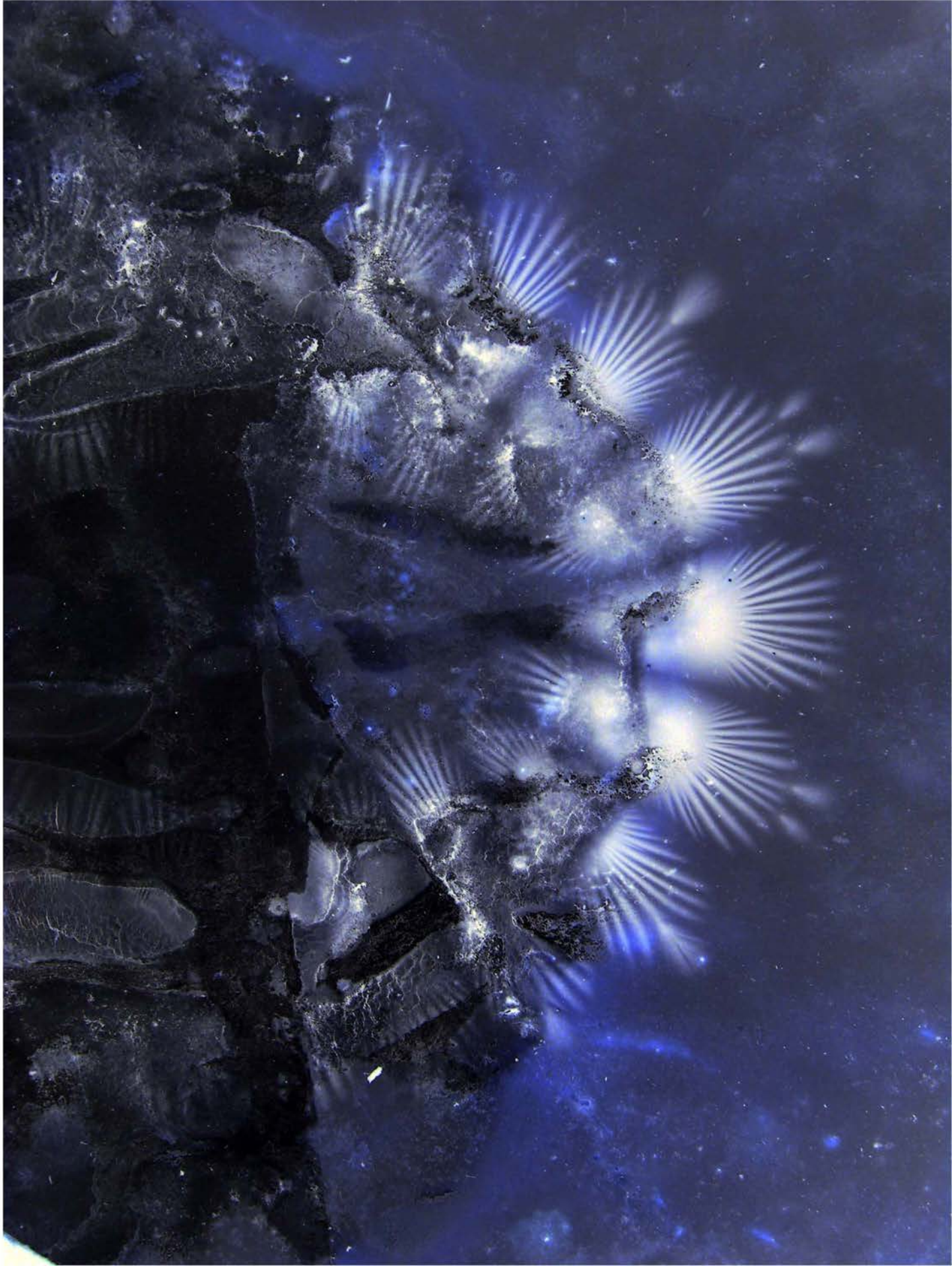












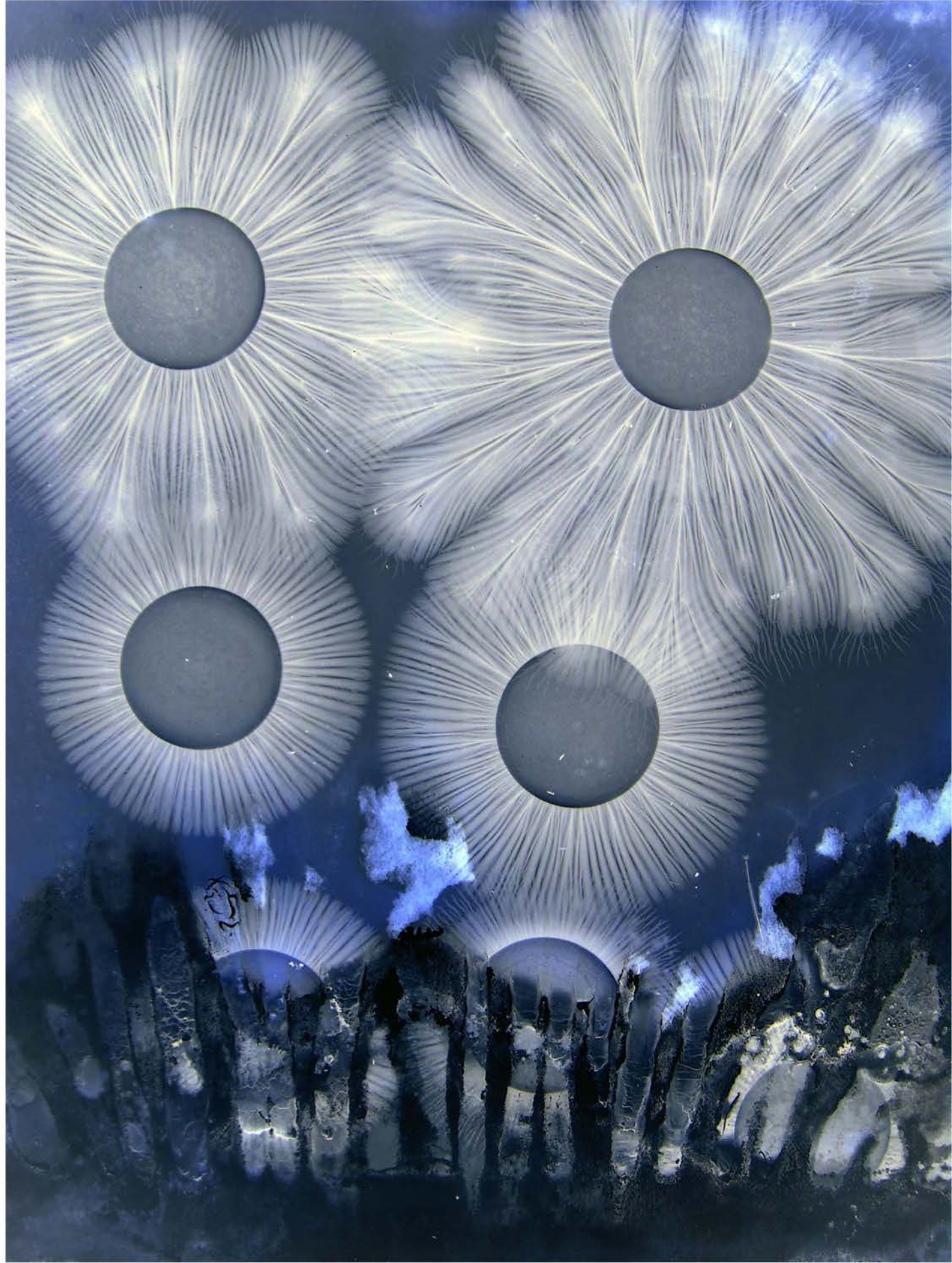




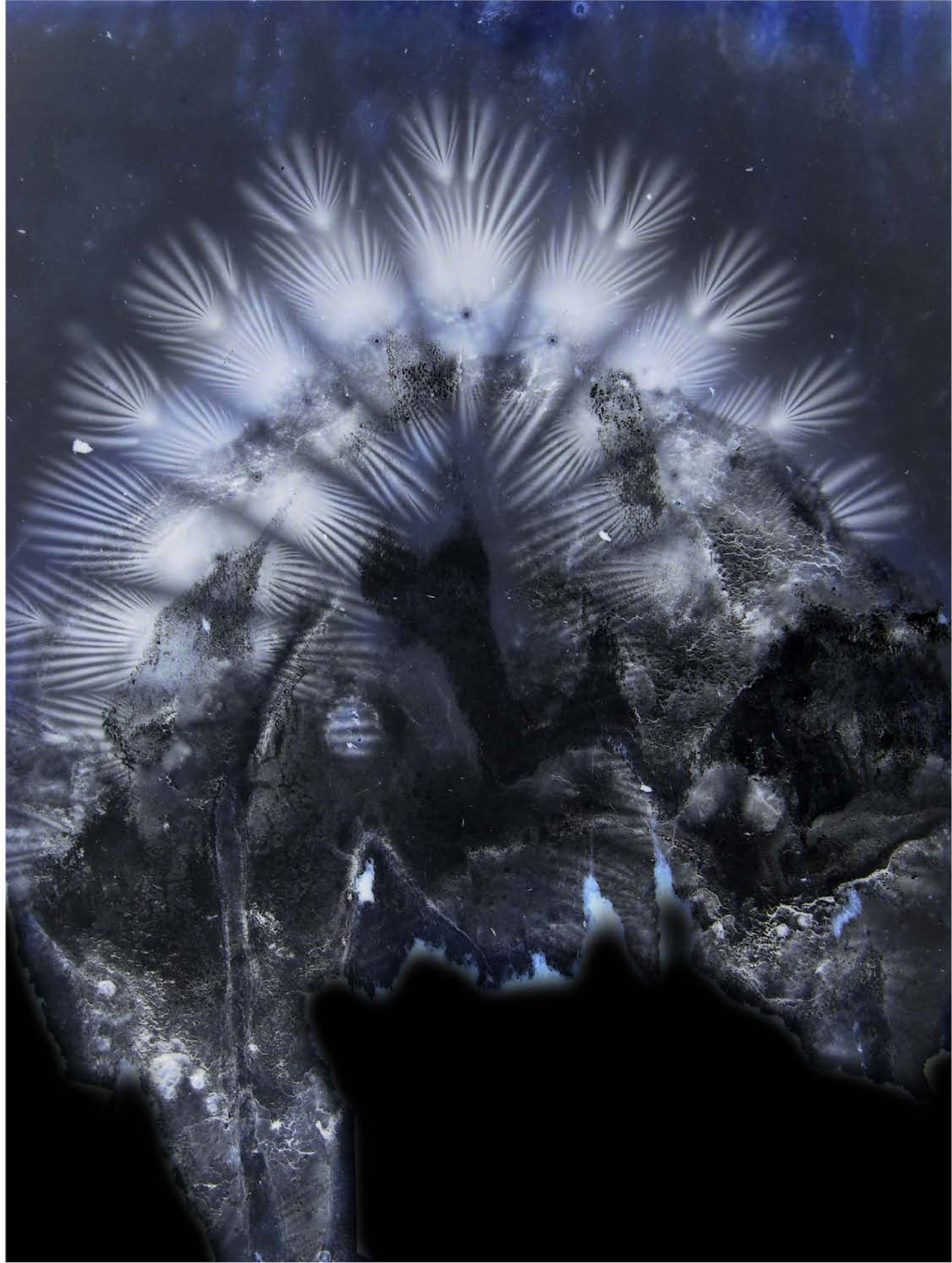








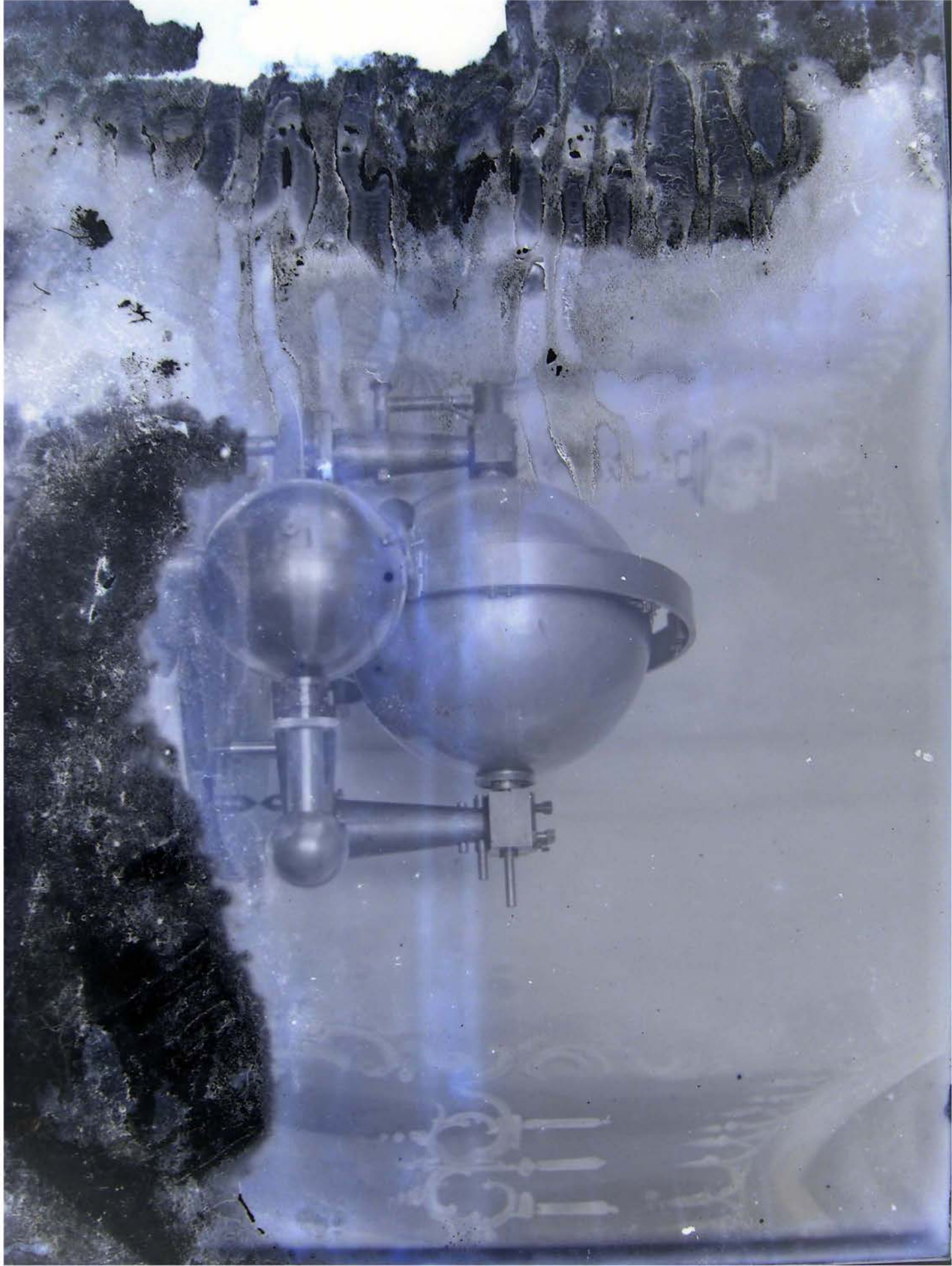


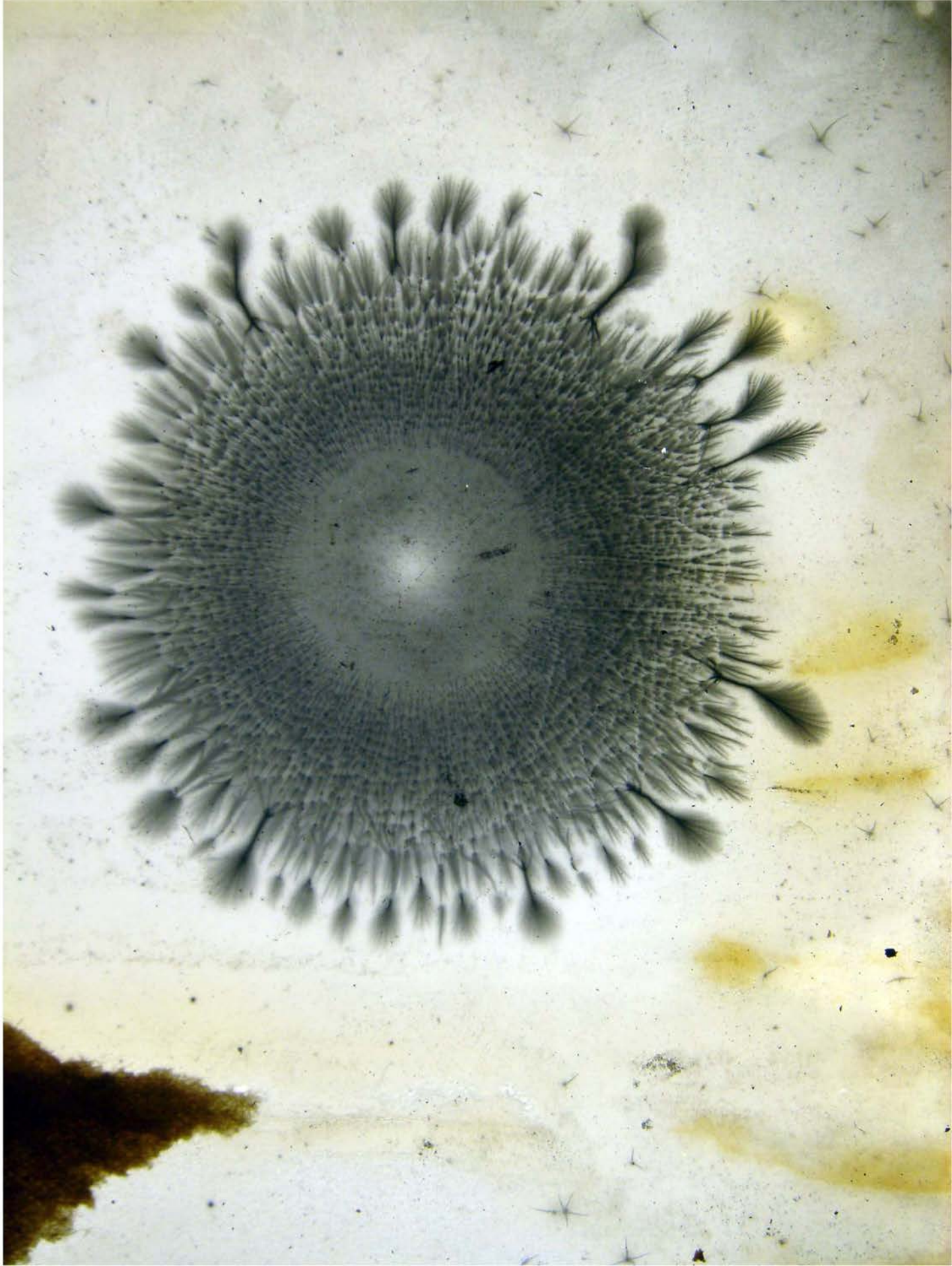








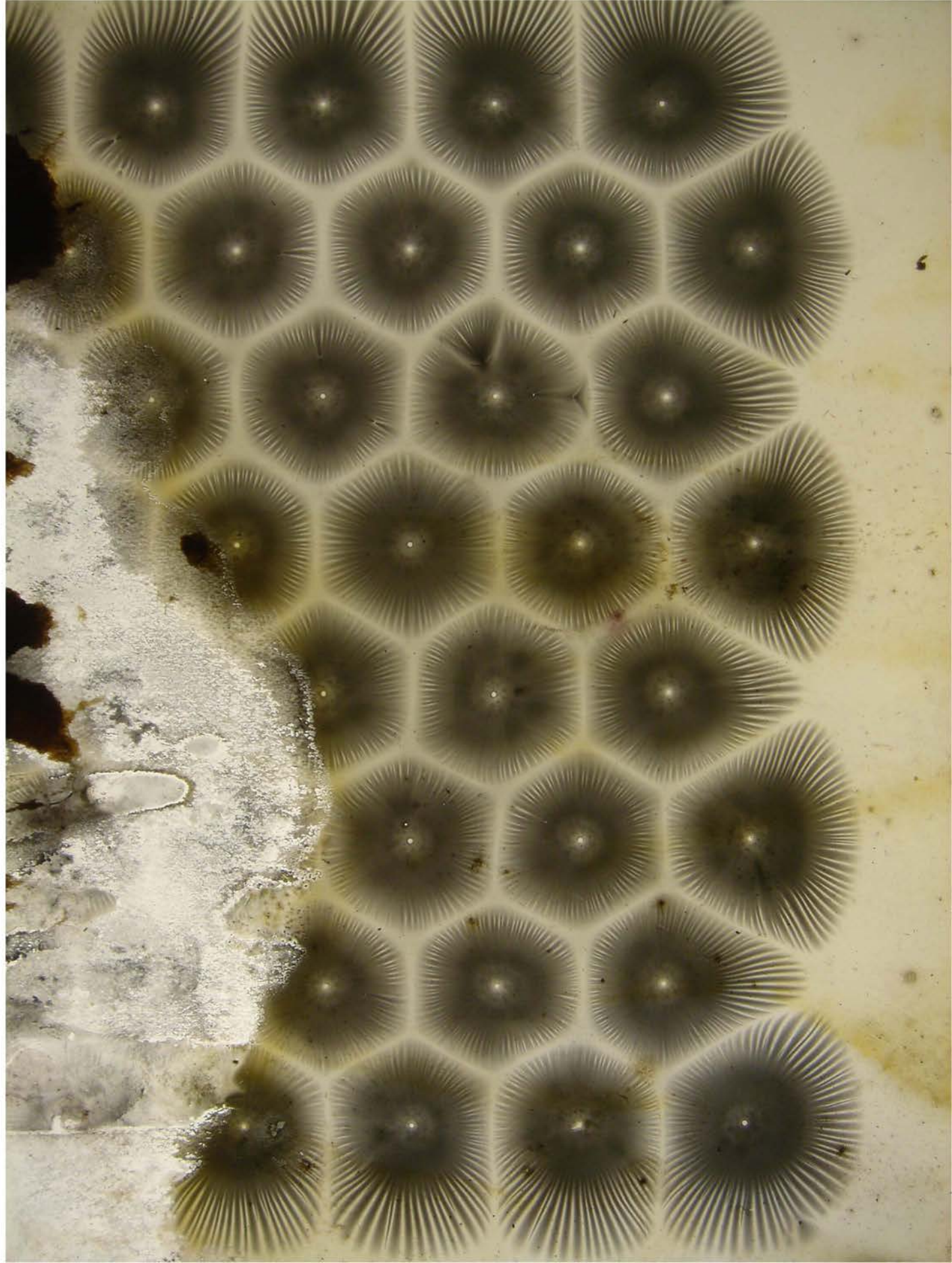


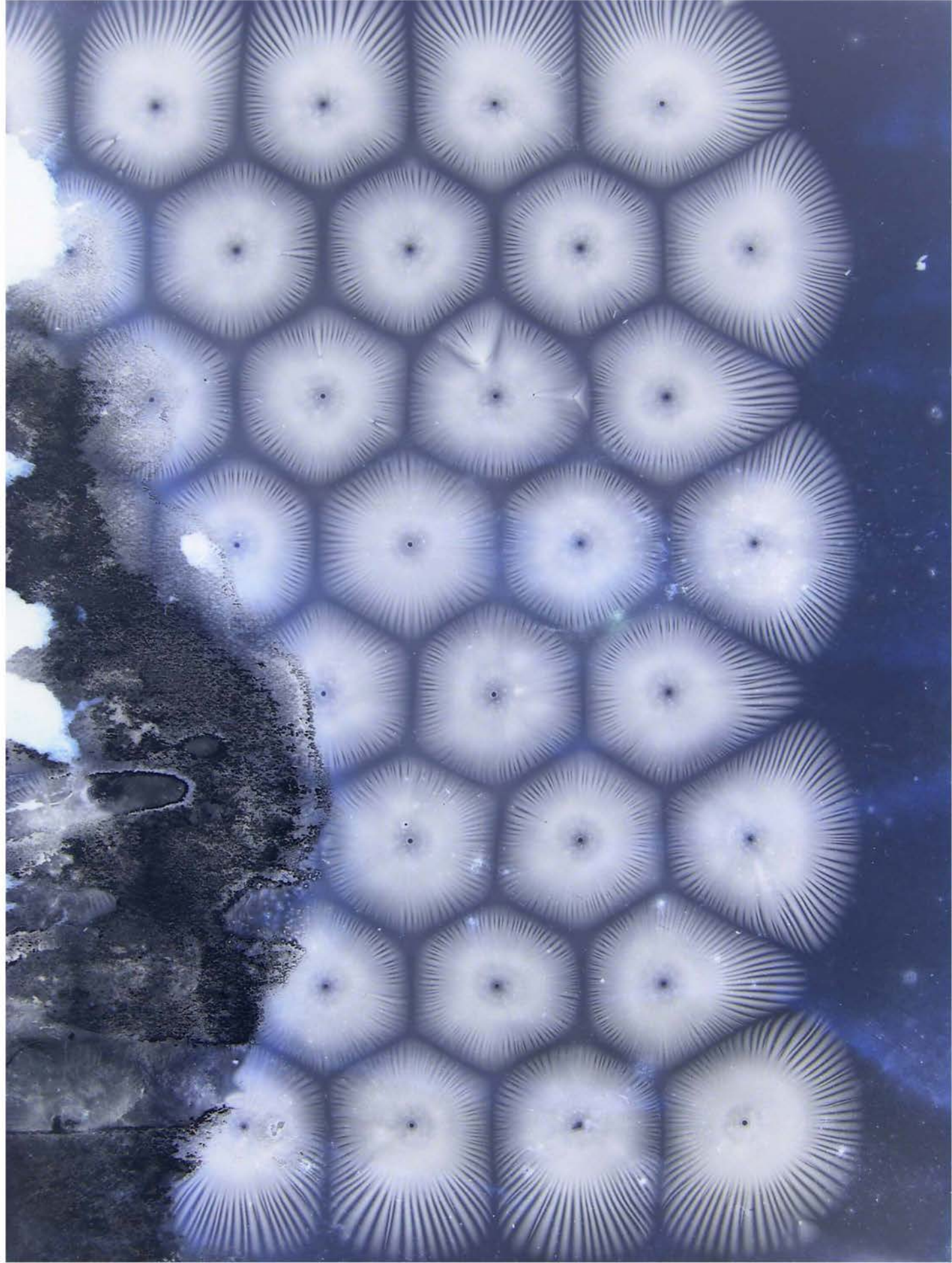






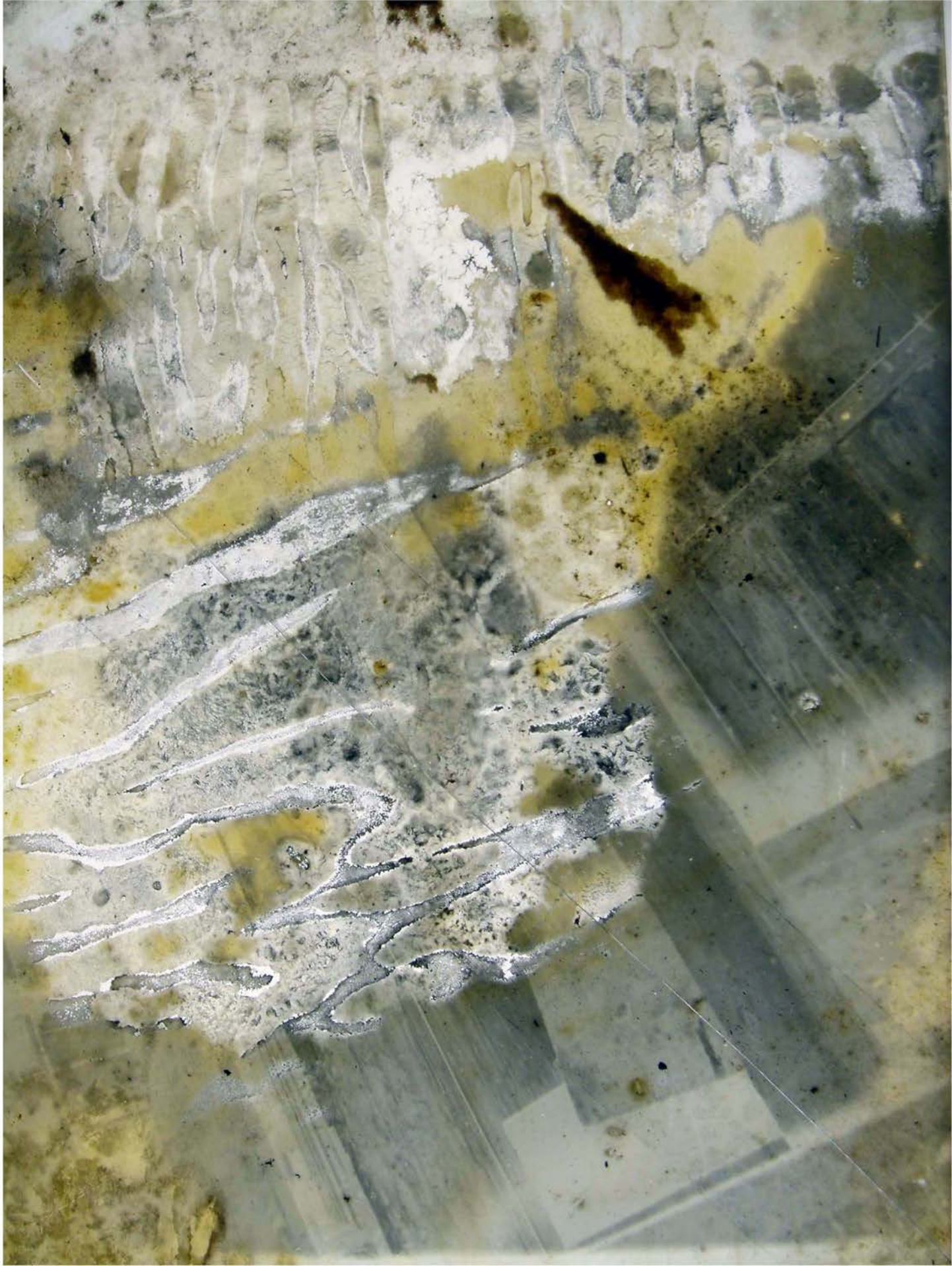


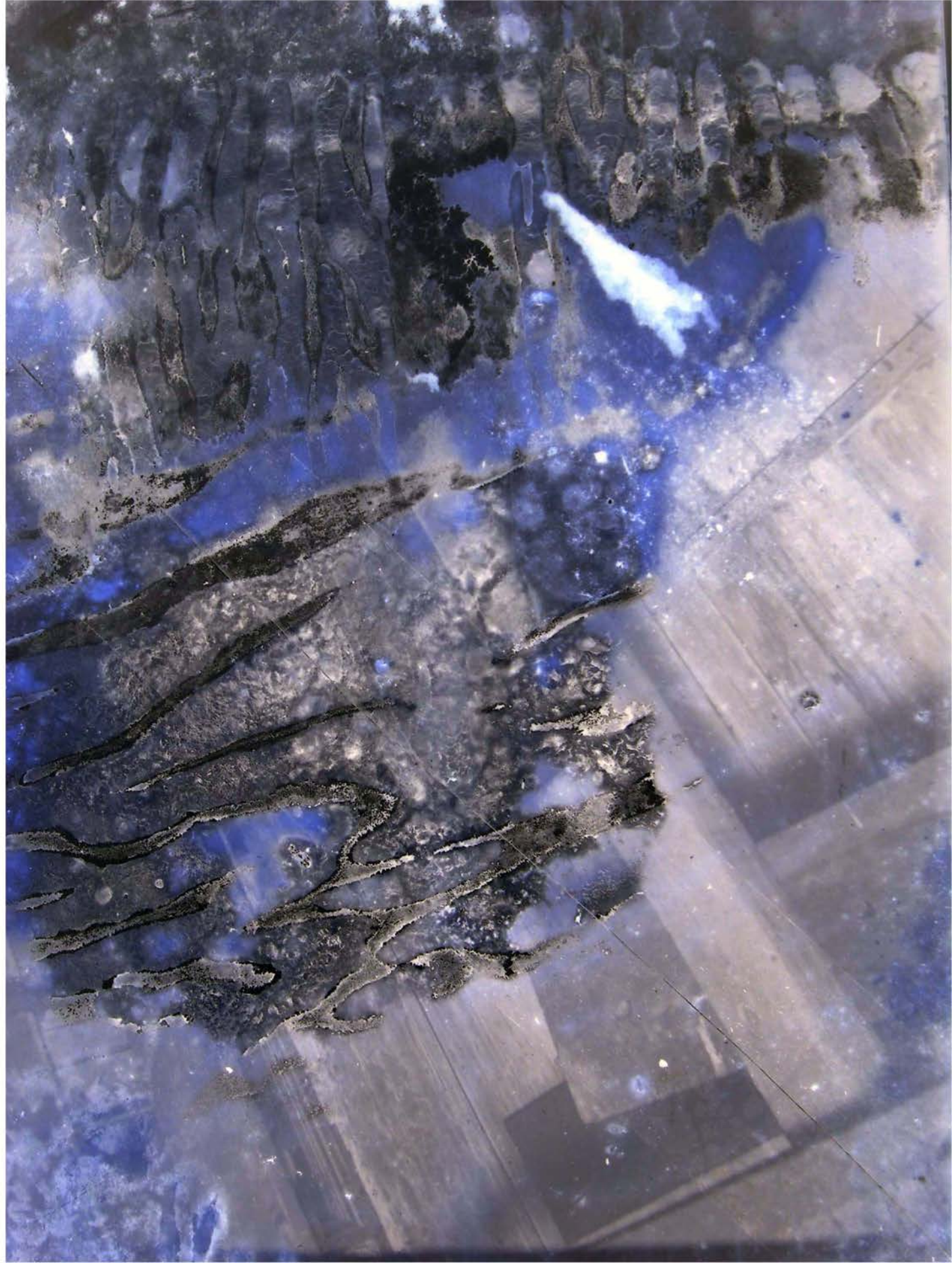


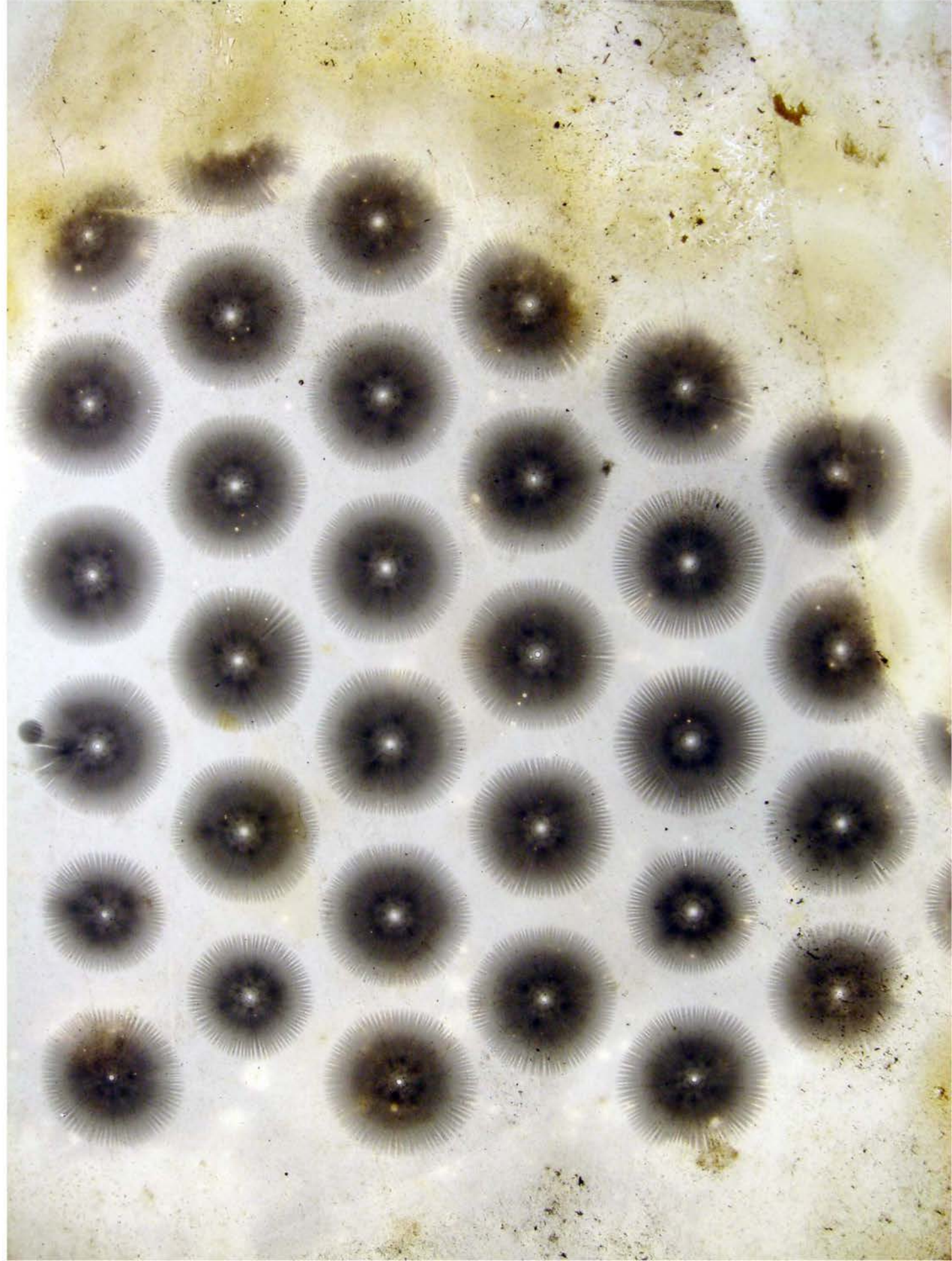


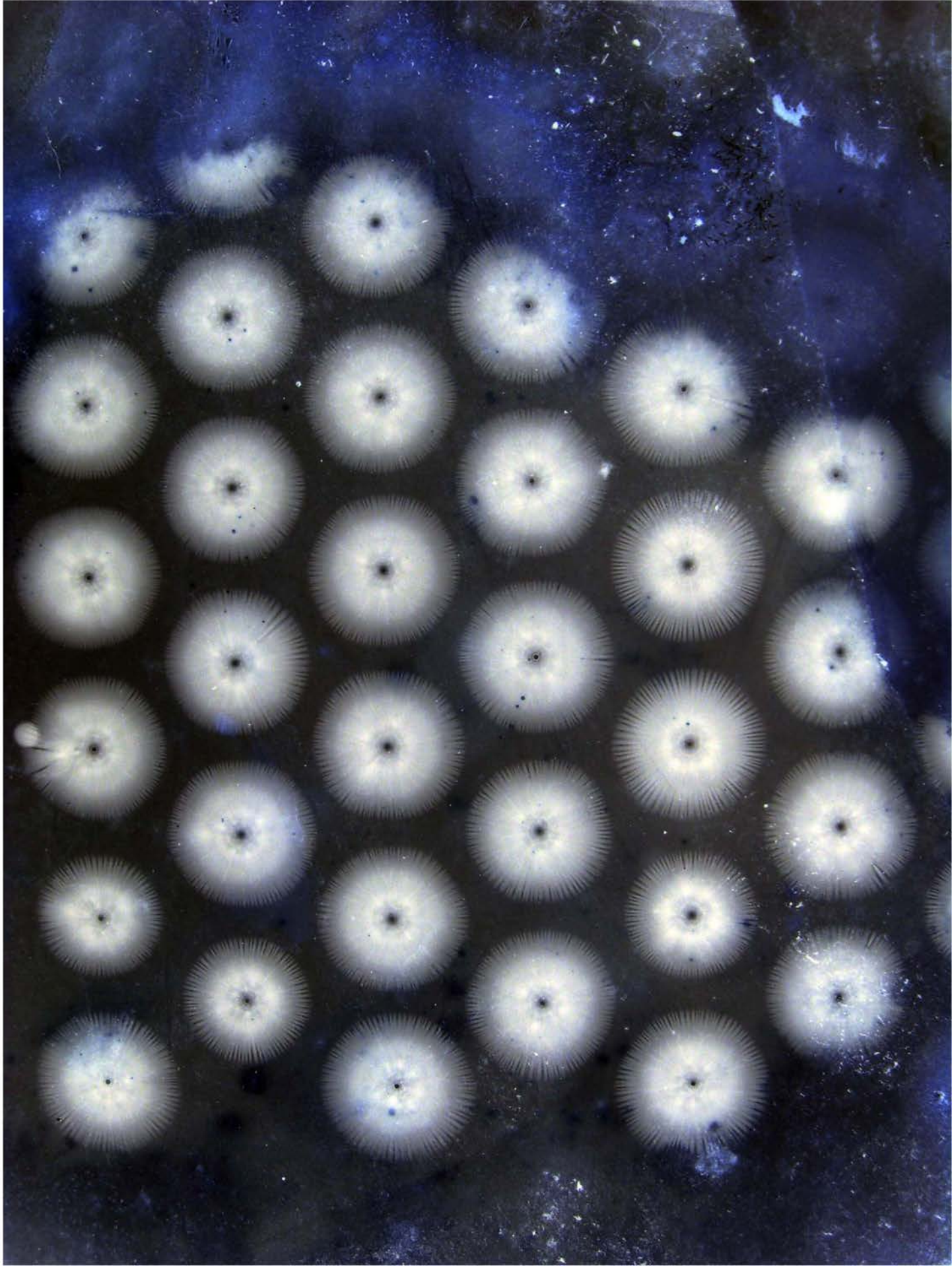








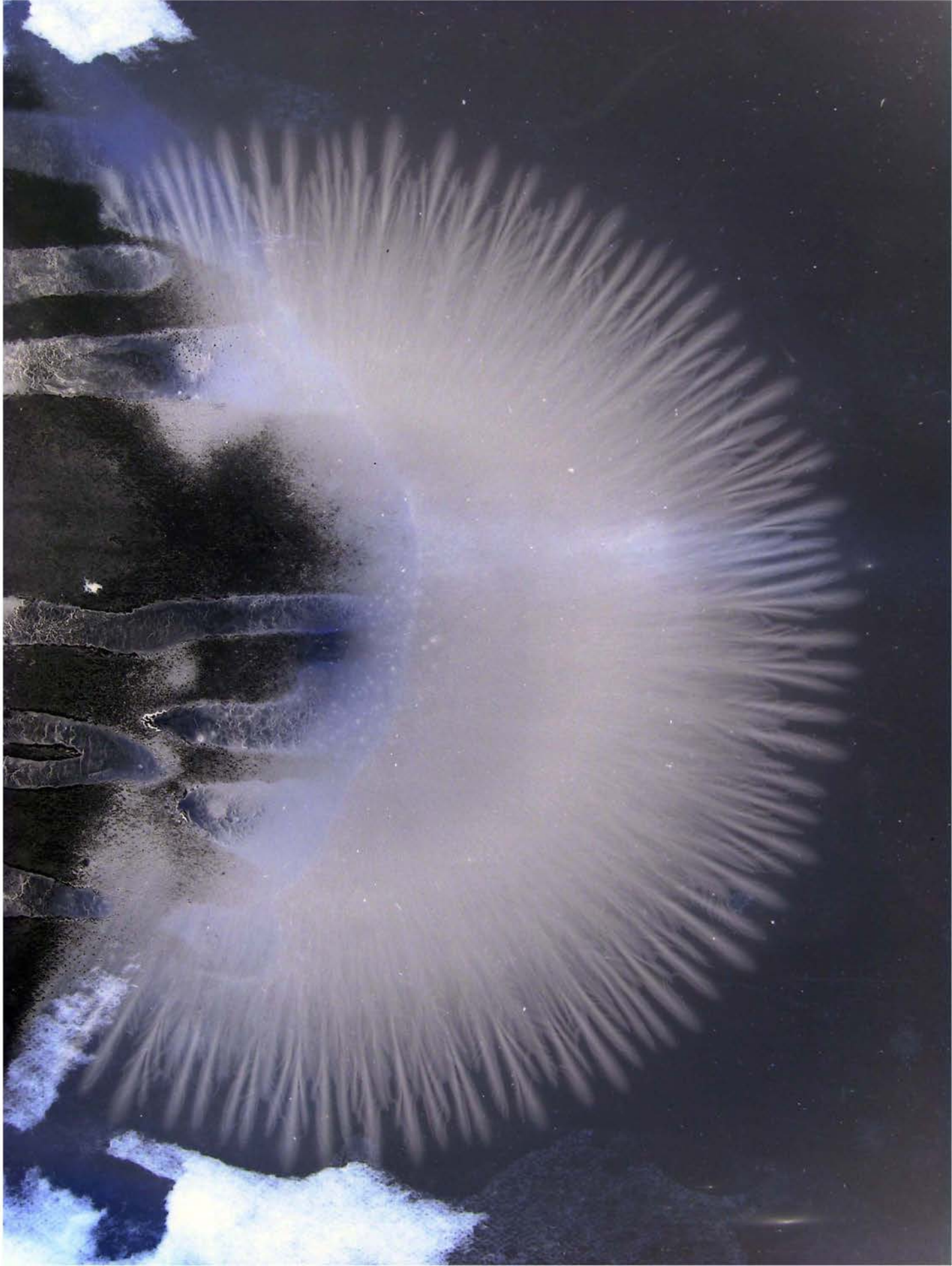


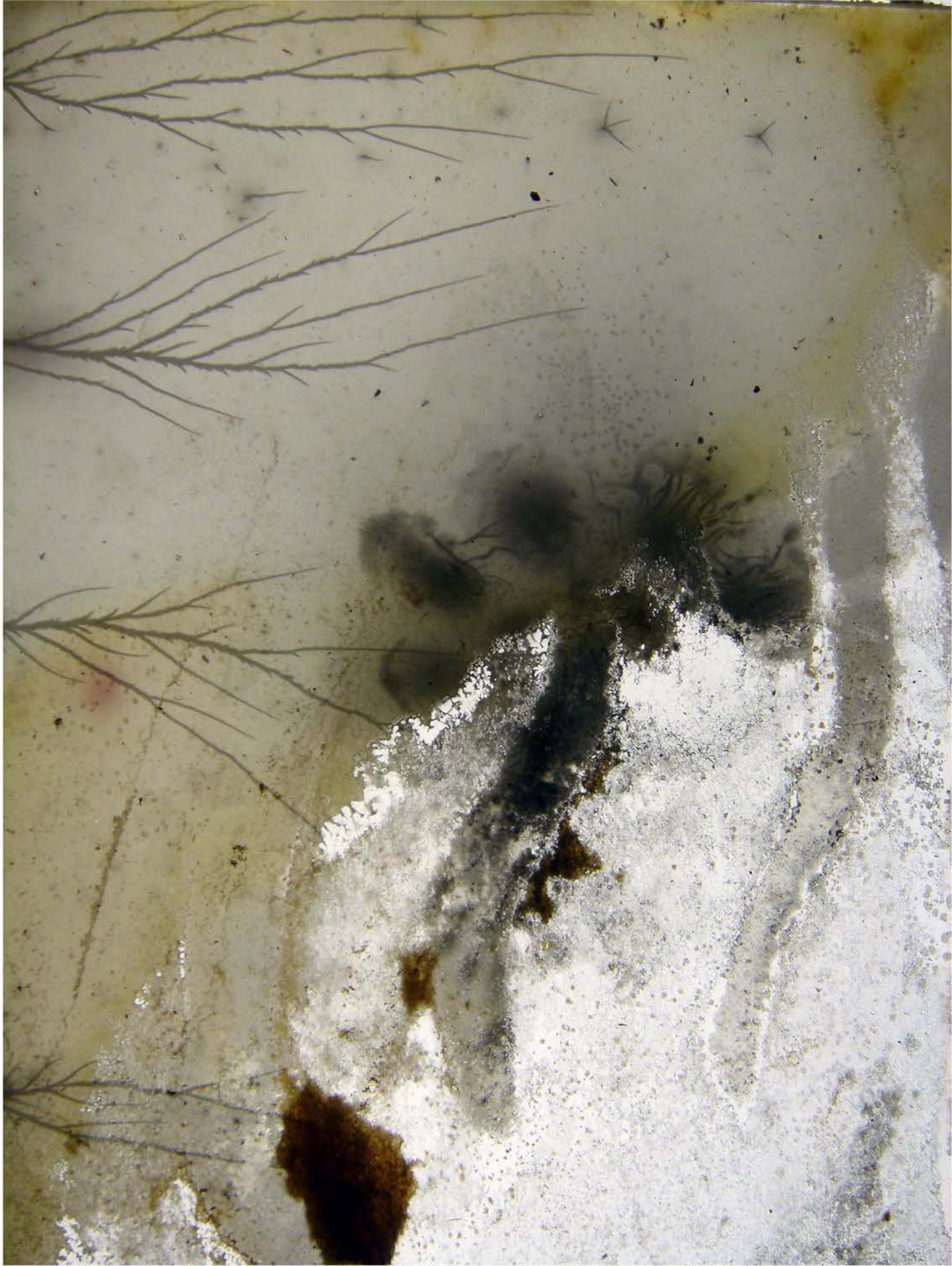








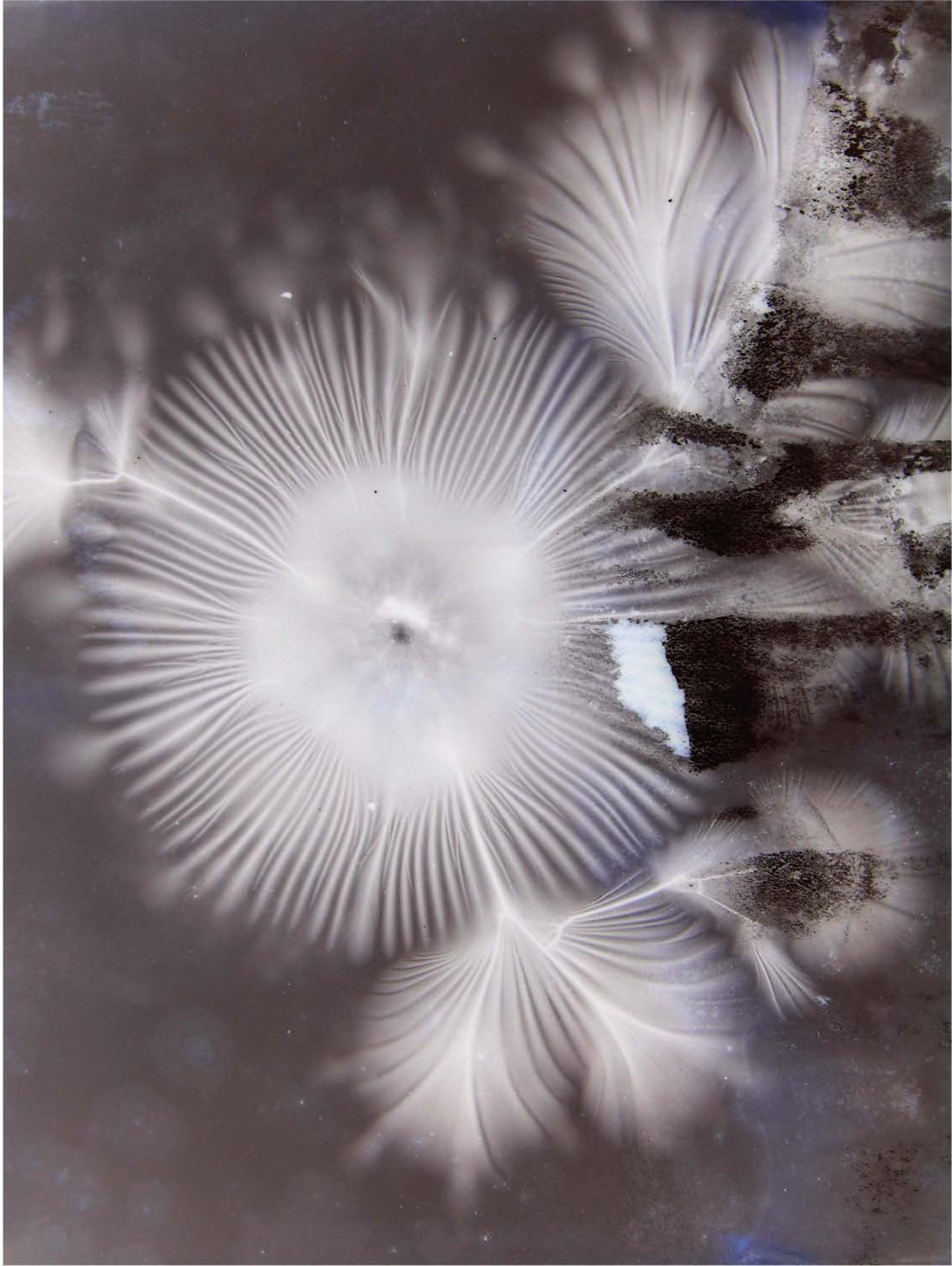
















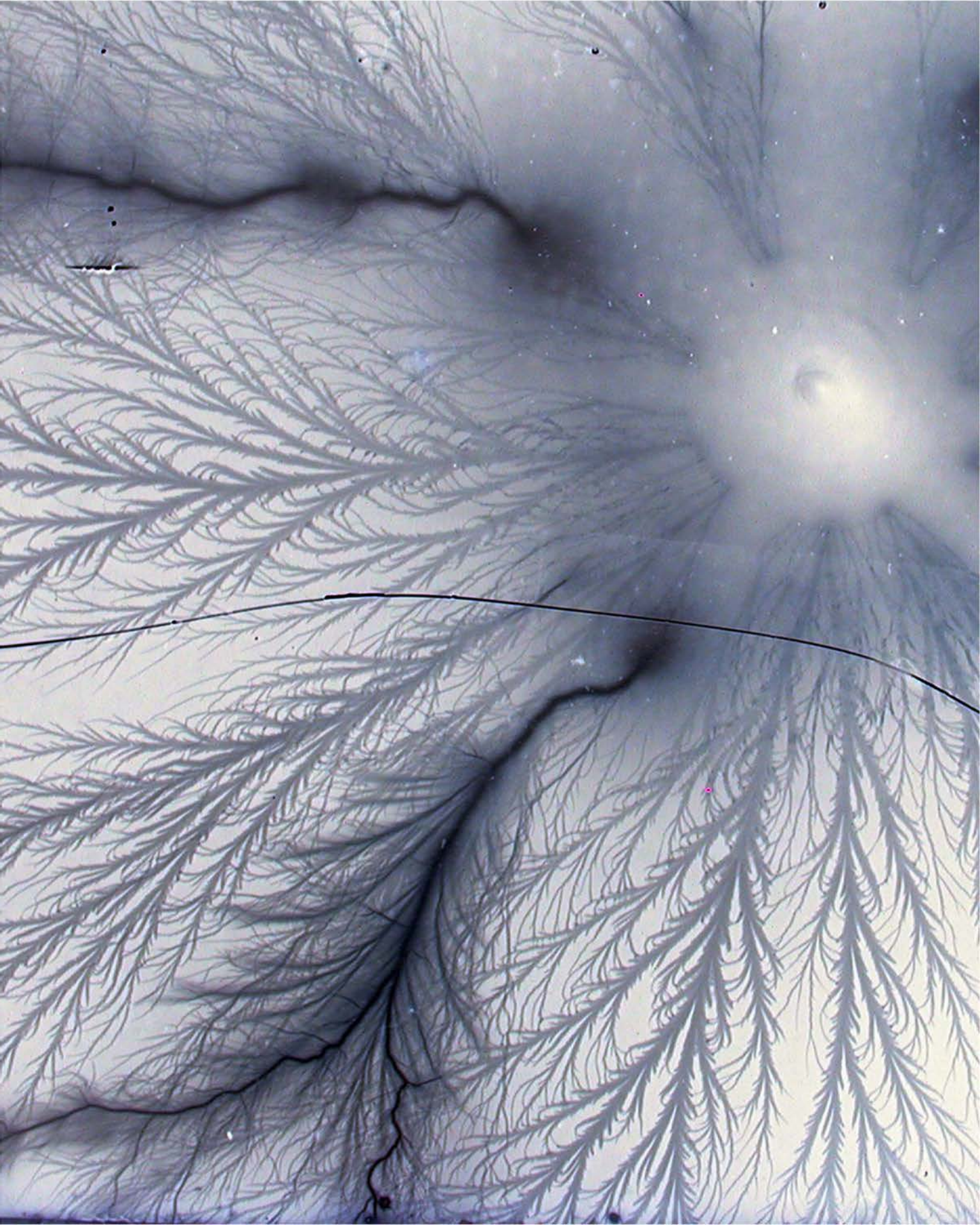




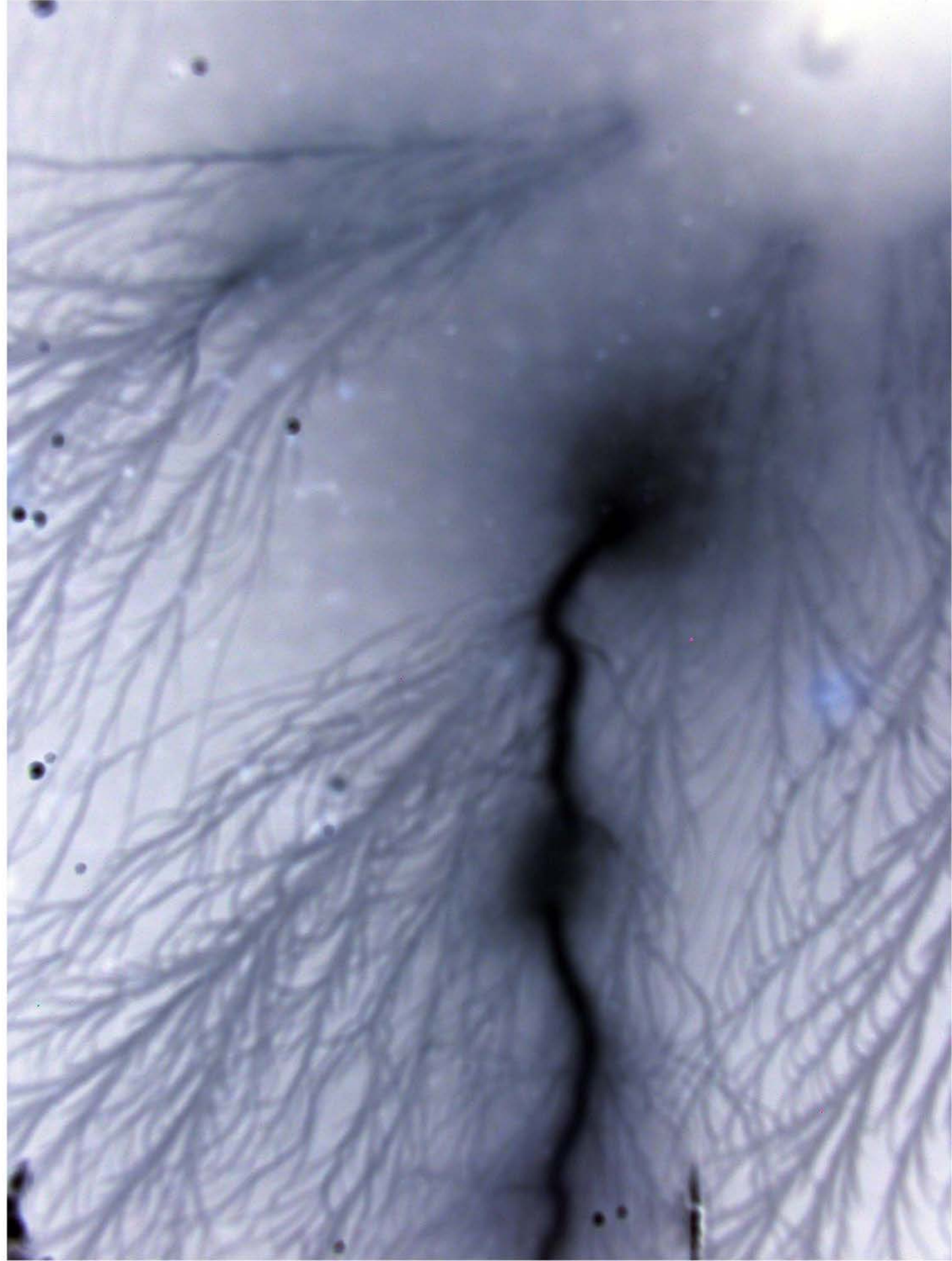






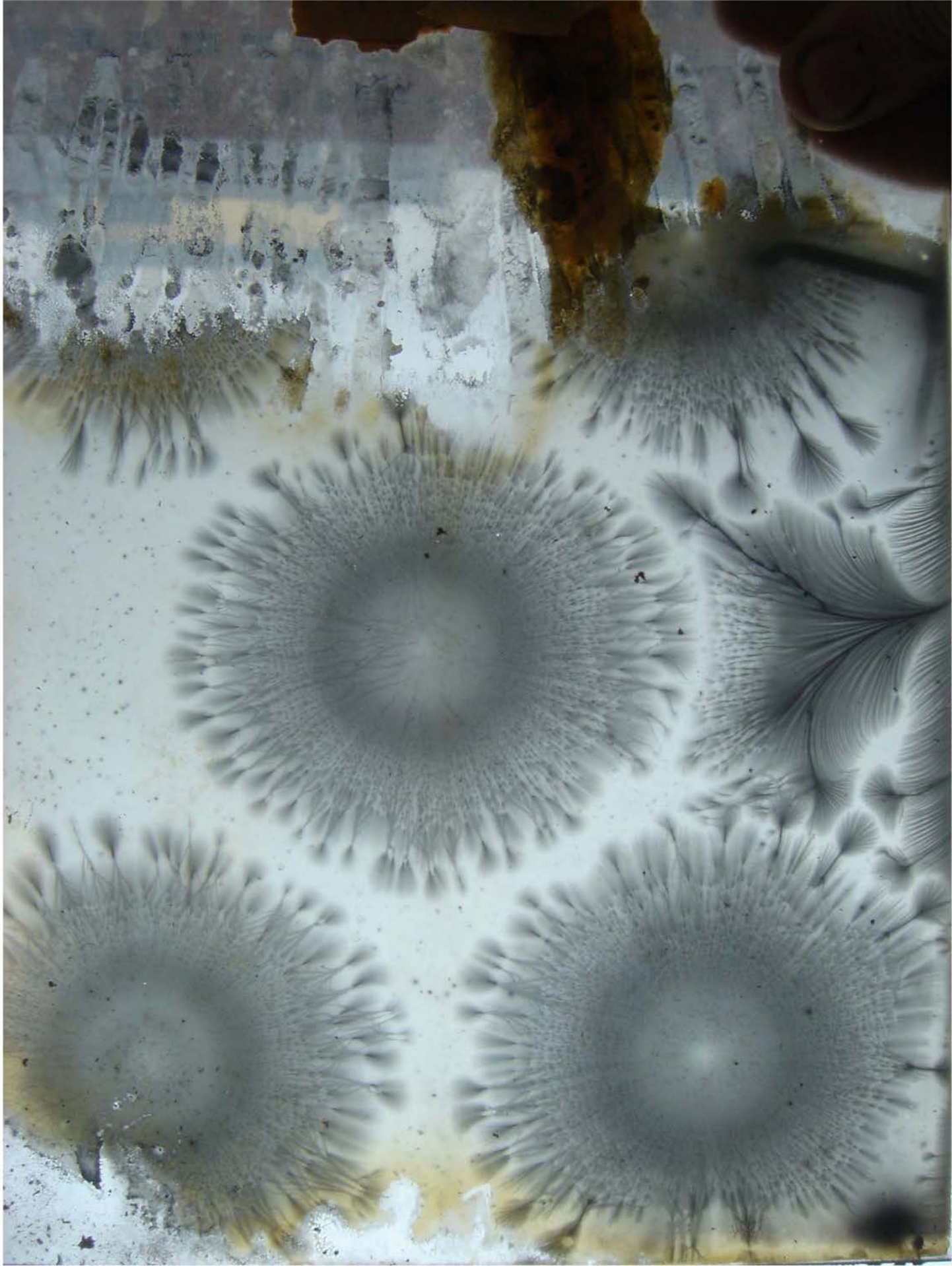


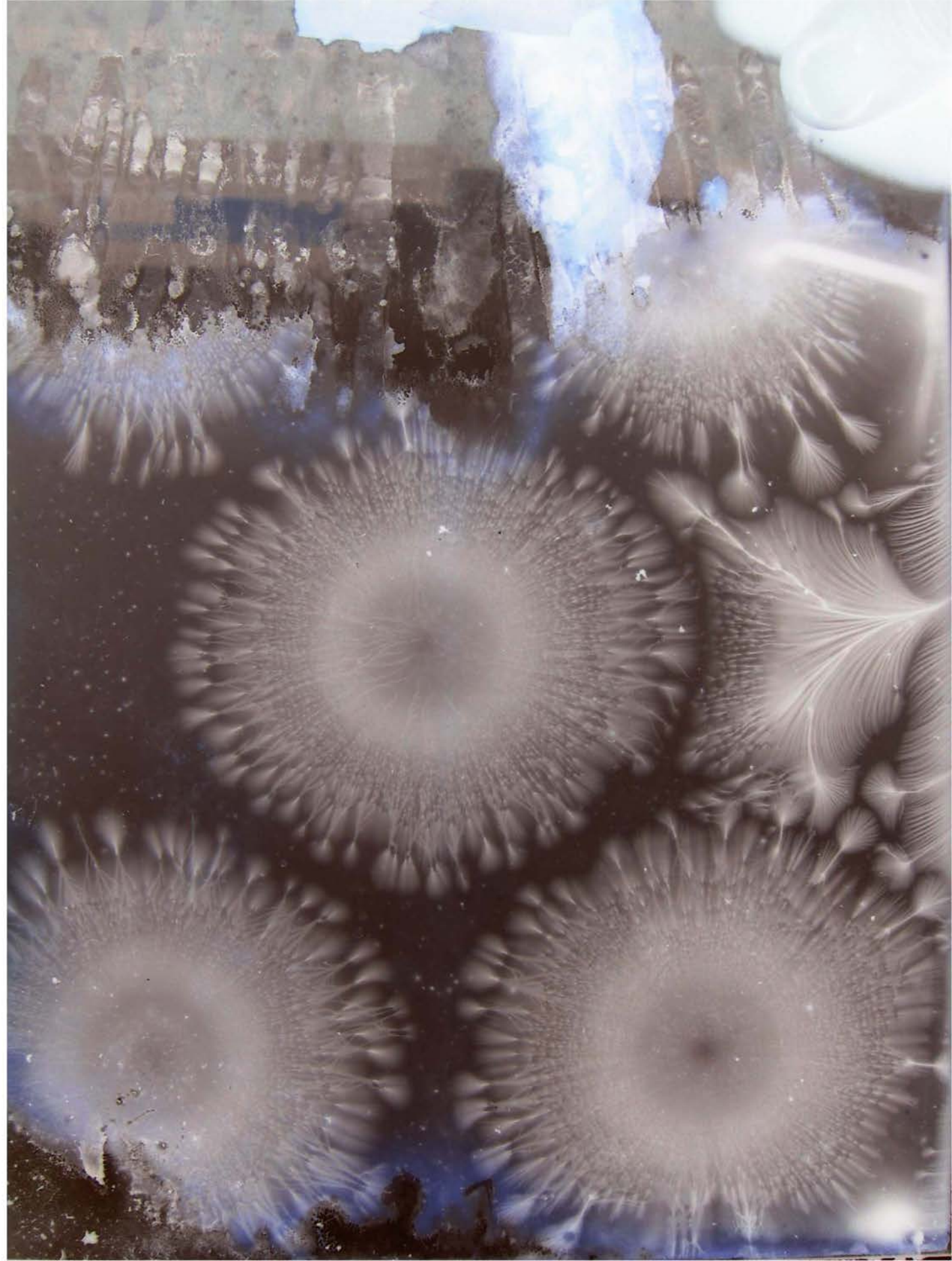


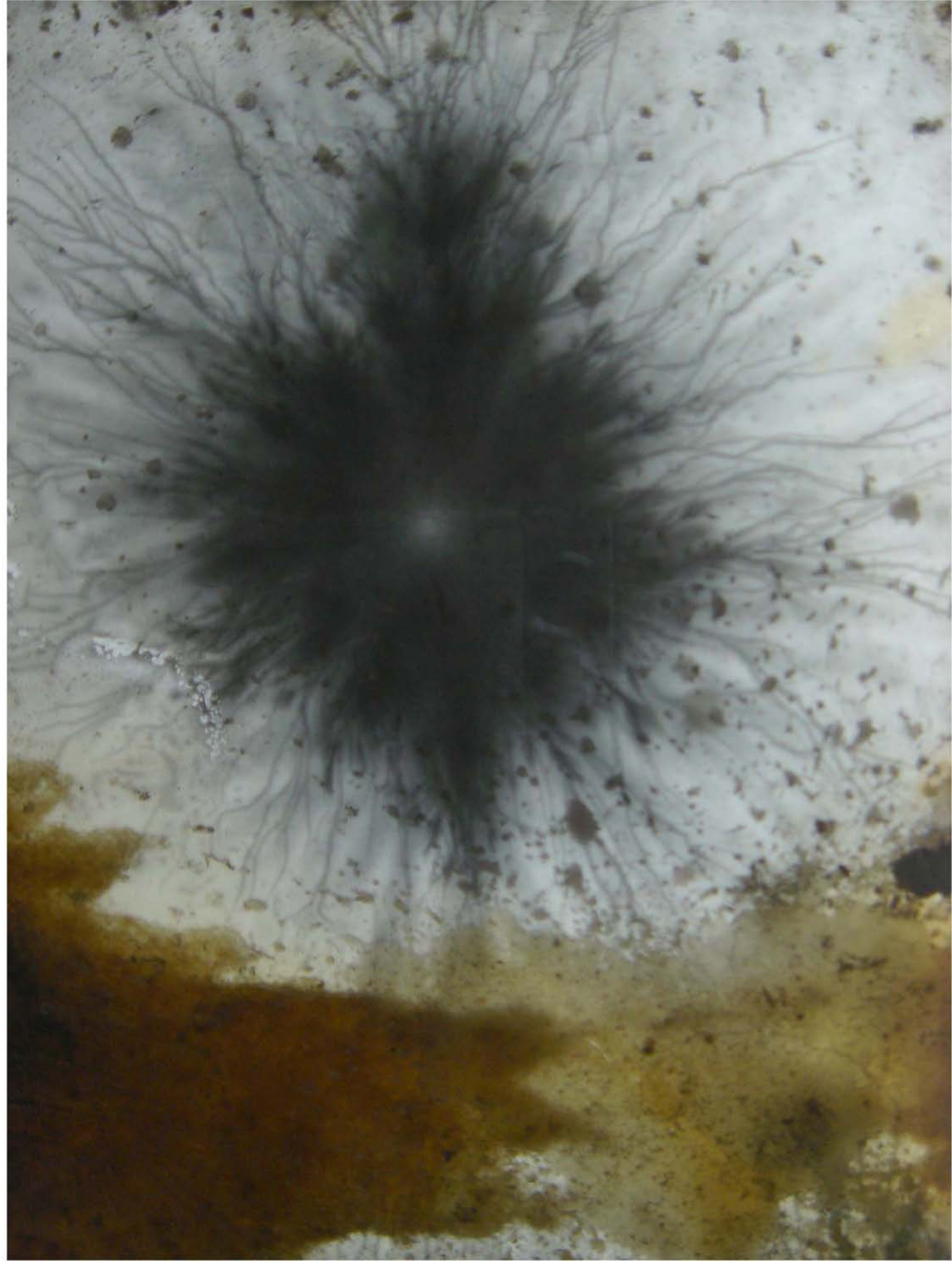




















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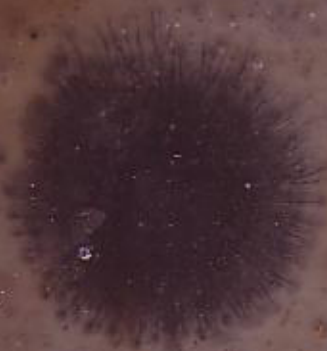
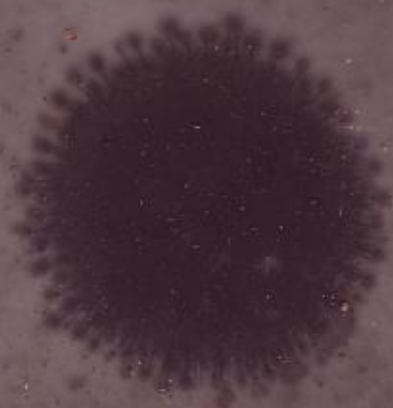
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Pure Partial Arborescent Positiv

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Maple Creek



















Produce Pure Arborescent



Actual Discharge from Lake
induced Discharge showing origin of water























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CURIOUS ELECTRICAL FORMS.

AS SHOWN IN MR. T. BURTON KINRAIDE'S RECENT PHOTOGRAPHS
OF ELECTRICAL DISCHARGES.

BY ANABEL PARKER.

THE remarkable photographs which it is the object of this article to explain constitute a graphic record, a genuine autobiography, of certain phases of one of the most wonderful and subtle of the great forces of nature. They are the result of several years of experimenting by a Boston investigator, T. Burton Kinraide, and are the record of impressions made upon sensitive plates by discharges of electricity. These photographs show the form and character of the so-called positive and negative phases of electric energy, and of a third phase which has never before been revealed. They hint at an apparatus unique in its delicacy of control. Beyond this, they throw fresh light on the very nature and character of this great force.

All the plates here shown were produced by discharges of minute quantities of electricity. From this point of view, they present a striking contrast to the plates published in *THE CENTURY* for June, 1900. Those were photographs of the phenomena resulting from discharges from electrical oscillators of great power. They recorded experiments

made by that consummate genius of electrical investigation, Nikola Tesla, who delights in handling enormous quantities of electric energy.

By a cursory glance at the different plates and at the explanatory lines under them, it will be seen that whatever may be the outline of the entire design on the plate, there is one unvarying structural form for the positive phase and one for the negative. These are so dissimilar in character that they need never be confused. The positive phase has always the branching, fern-like structure which Mr. Kinraide calls filiciform, while the negative invariably shows the soft and feathery appearance which is well described as plumous. Whether the plate shows a single large disk composed of exquisitely delicate forms radiating from a center, or a series of zigzagging comets, one can readily tell by noting the structure whether the discharge which printed itself on the plate was in its positive or its negative phase.

This series of electrographs was, with a

few exceptions, produced by means of a condenser apparatus, upon one surface of which the sensitive plate was placed. This surface can be electrified either positively or negatively at the will of the operator. Suppose it to be negatively electrified, and then touched at the center by a small brass sphere which is in connection with the positive terminal of the apparatus. The instant discharge from the sphere rushes out in all directions over the surface of the plate, and there is produced the beautiful figure shown in Plate I. Suppose, on the other hand, that the condenser surface on which the sensitive plate rests is positively electrified, and that a brass sphere connected with the negative terminal be brought in contact with it. The energy is gathered up, as it were, from the plate, and rushing toward the conducting sphere, leaves on the surface the print of its vanishing footsteps, as in Plate II.

With one or two exceptions, all the plates here shown are based upon the existence of these two sets of conditions, i.e., a surface negatively electrified brought in contact with a positive terminal, and a surface positively electrified brought in contact with a negative terminal. The terminal may be connected with a single sphere, as already suggested, with a roller, or with tiny metallic balls or needle-points. The deft manipulation of these mechanical devices produces the variety of design. The plates which were produced under conditions other than these will be noted farther on.

It is now five years since Mr. Kinraide made the happy discovery which led him to experiment along the lines of electrical photography of which these beautiful plates are the result. The apparatus he at first used was quite unlike the one he is now using, and was without the condenser plates. Many of the results that can be obtained from the one now in use he was unable to obtain by means of the former, but untiring efforts to discover the causes of his failures finally brought a knowledge that enabled him to construct an apparatus capable of producing the perfect plates here shown. As in many other instances, failure lighted the way to success.

It is necessary to touch briefly on the construction of the apparatus and on the experiments carried on by means of it in order to give a clear idea of the way in which Mr. Kinraide has arrived at certain important conclusions. The apparatus has, as an interesting feature, a unique kind of secondary induction-coil consisting of a cir-

cular disk of fine wire wound in about one thousand turns. The peculiarity of this coil is that it will discharge out into the air as easily as the Ruhmkorff coil discharges toward its other terminal. In other words, the electric energy, instead of discharging from two equal potential terminals, as is the case where the Ruhmkorff coil is used, passes into the air almost wholly from one terminal. The non-discharging terminal is connected to an earth-wire, and thus its influence is entirely removed. The coil has a superb insulation, and will easily withstand a pressure under which the Ruhmkorff coil splinters to atoms. Thus the apparatus controls a higher voltage for the quantity than any other so far made.

It was while studying the discharge from this apparatus in the dark that Mr. Kinraide noticed peculiar, fern-like forms of a pale violet color radiating from the two-inch brass sphere which formed the discharging terminal. By manipulating the discharge, he could make a number of these beautiful, quivering forms appear. By using spheres of larger diameters and increasing the potential, he could increase the length and size of the light-forms until they would shoot out thirty inches beyond the sphere and reach an apparent thickness of half an inch. They looked like miniature forks of violet-tinged lightning, cleaving the darkness of the laboratory. By balancing an ordinary photographic plate on the top of the spherical terminal, film side down, and opening and closing the circuit once, a photograph of the quivering light-forms was secured. They recorded themselves as the filiciform or positive phase of electric energy. This was a first effort, and a first success.

Upon a reversal of the current, an entirely different phenomenon was observed. Instead of the branching outshoots of violet light, there appeared plume-like forms resembling the cattail of the meadow-flag. These seemed to be about an inch in diameter and seven inches long. An attempt to secure a photograph of these plume-like forms was made, but though the plate was as carefully adjusted and the current as skilfully manipulated as before, there was no record found upon the plate when it was developed. The experiment was repeated again and again, but with disheartening results. The plumes forms could not be induced to make any impression on the sensitive plates. For two years Mr. Kinraide experimented, sacrificing plates enough to build a greenhouse. Then he made a discovery. The plumes

forms were not, as he had supposed, discharging outward from the sphere; they were discharging inward from the surrounding air.

The discovery of this fact was of the greatest significance. It seemed to proclaim electric energy not a dual force with a dual activity, but a single force with a single line of direction for the sweep of its energy. Furthermore, it showed plainly that the so-called positive and negative phenomena indicate, the one an accumulation or heaping up of electric energy, the other a corresponding withdrawal. It was through study of the plumous forms that Mr. Kinraide was led to the discovery of the conditions necessary for the successful production of these photographs. He realized that, in order to secure on a photographic plate the record of the so-called negative electricity, the plate must represent the withdrawal of energy; in other words, it must be electrified and then made to discharge itself into some conductor.

With the condenser apparatus, he found no difficulty in securing the record of the negative phase. A photographic plate placed upon the positively electrified surface of the condenser became in turn positively electrified. Then, when any conductor connected with the negative terminal was brought into contact with it, the stored-up energy immediately sought an equilibrium and rushed from all directions toward the conductor. This produced a condition of withdrawal on the plate, or, in other words, showed the so-called negative phase of electricity.

It was then that Mr. Kinraide made another discovery. Not only did he secure photographs of the positive and negative phases, but there was revealed on some of the plates the existence of comet-like forms in which the positive and negative were seen to be united, base to base. The meaning of these comet forms was not at first understood, nor did Mr. Kinraide know how it was that they appeared on the plates. Former photographs had indicated a separation between the two phases; none had ever shown that they were united. These comet forms, therefore, presented a new field for investigation, and it was only after careful study and experimentation that their significance was discovered.

The comet structure Mr. Kinraide has called, by reason of the conditions under which it is created, the electric entity. It is a record of the entire activity of one small quantity of electric energy, an embodiment, as it were, of the force, and literally an entity

of energy, having a birth, a growth, and a subsequent death or dispersion. Its center, or body part, is plainly neither positive nor negative in character. Mr. Kinraide calls it the third or dynamic phase of electricity. His reasons for this will be apparent farther on.

In order to make clear the way in which the comet structure was secured, it may be well to explain first the development of the figure on Plate III. This is not one of the condenser series of photographs, but was secured from a very different and quite simple apparatus. It is introduced here to make clearer the interpretation of the other plates.

Without describing the apparatus in detail, it is sufficient to say that it presented a flat surface about twice as long as wide. This surface was divided by a narrow strip of dielectric or non-conducting material into two areas of equal extent, each of these being nearly square. The apparatus was so arranged that when the current was turned on, one of these areas would become positively, the other negatively electrified, the dielectric between them preventing the energy from reaching a state of equilibrium.

The photographic plate was placed in position on the flat surface, half of it on one side of the dielectric, half on the other. A metallic bar was then laid upon the plate at right angles to the dielectric. Thus its ends lay at the respective centers of the two areas which were to be oppositely electrified. By closing the current and then breaking it once, Plate III was obtained. The two ends of the photographic plate became oppositely electrified, like the areas over which they were superimposed. When the current was broken, the energy in the two oppositely electrified surfaces immediately rushed to an equilibrium, using the metallic bar as a conductor. From the positively electrified surface the energy shot into the bar, recording its withdrawal in the delicate plumes of the negative phase. Then it hurried along and finally shot out and dispersed itself over the negatively electrified surface in the filiciform streamers, which always indicate the outward rush of the current.

In the evolution of the comet structure, analogous conditions obtain, with the exception that the electric energy uses the air as a conducting medium instead of a metal conductor. This enables it to record the entire history of its action on the sensitive plate. Keeping this explanation in mind, the reader will be able to understand Plate IV, which is one of the condenser series.

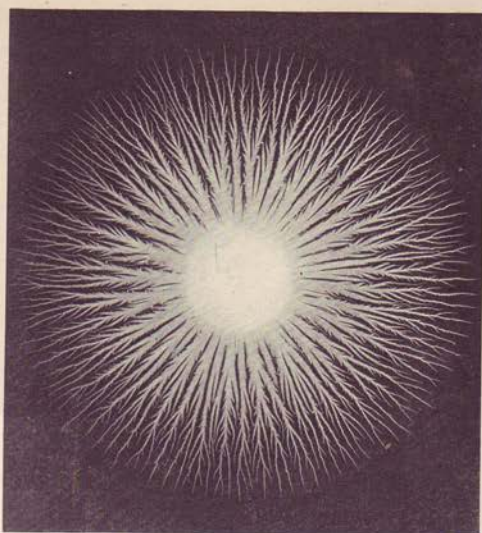


PLATE I. ANODOS.

A discharge of electric energy over the negative surface of a condenser from a two-inch sphere connected with the positive terminal.

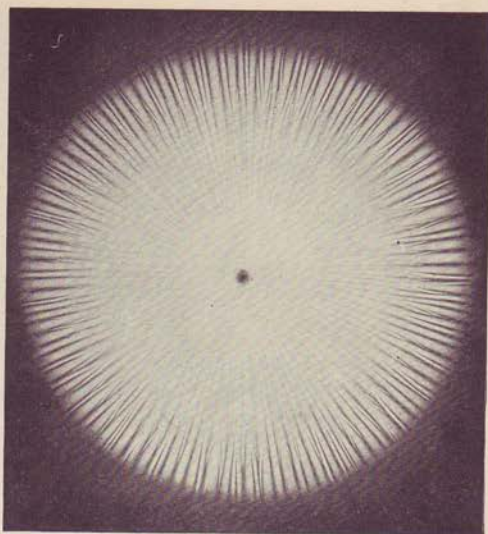


PLATE II. KATHODOS.

A discharge of electric energy over the positive surface of a condenser toward a two-inch sphere connected with the negative terminal.

In order to secure this, the condenser surface upon which the sensitive plate was to be placed was first

highly charged with electric energy. Then the photographic plate was carefully placed upon it, film side up. A metallic discharger, fitted with an adjustable spark-gap, was now used. By means of this spark-gap it was possible to regulate the amount of energy to be withdrawn from the plate. After being connected with the negative terminal of the apparatus, the discharger was placed at the center of the plate, and a small quantity of the energy was permitted to escape. This created a circular, negative area on the plate, while surrounding it was a charged area.

As in the case of the two oppositely electrified squares previously referred

sensitive plate was to

to, the energy sought an equilibrium. Small quantities of it shot inward toward the cir-

cular, negative area, and the onward rush was recorded on the plate in the filiciform streamers extending toward the center, while the withdrawal from the outer rim produced the soft plumous forms. All this took place before the discharger in the operator's hand could be withdrawn from its instant of contact with the plate.

The energy started from a condition of diffusion, and ended in a condition of diffusion, but at the instant of its greatest power it was focalized. This instant of focalization is represented on the plate by the slender spindle joining the plumous and the filiciform. This is what Mr. Kinraide calls the dynamic phase of electric energy.

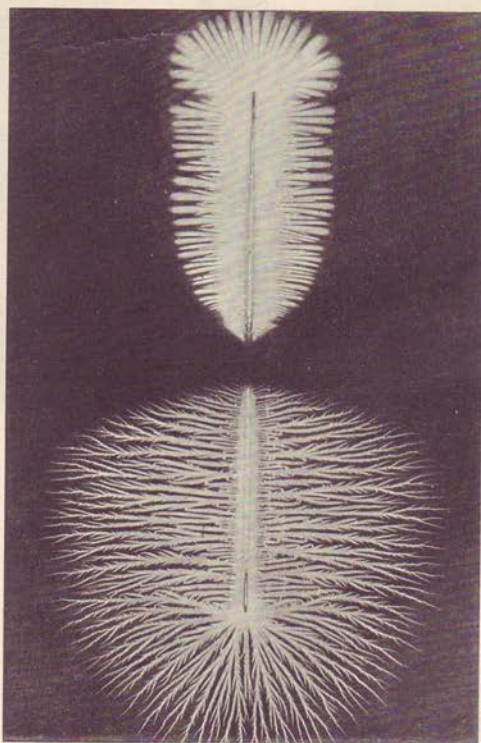


PLATE III. COMPOSITE ELECTRIC ENTITY.

A transfer of electric energy produced by placing a short, metallic rod across the line dividing two oppositely charged areas. The part of the plate upon which the plumous or negative phase is seen is the part which was at first positively electrified. The part upon which the positive streamers are seen was the negatively electrified areas.

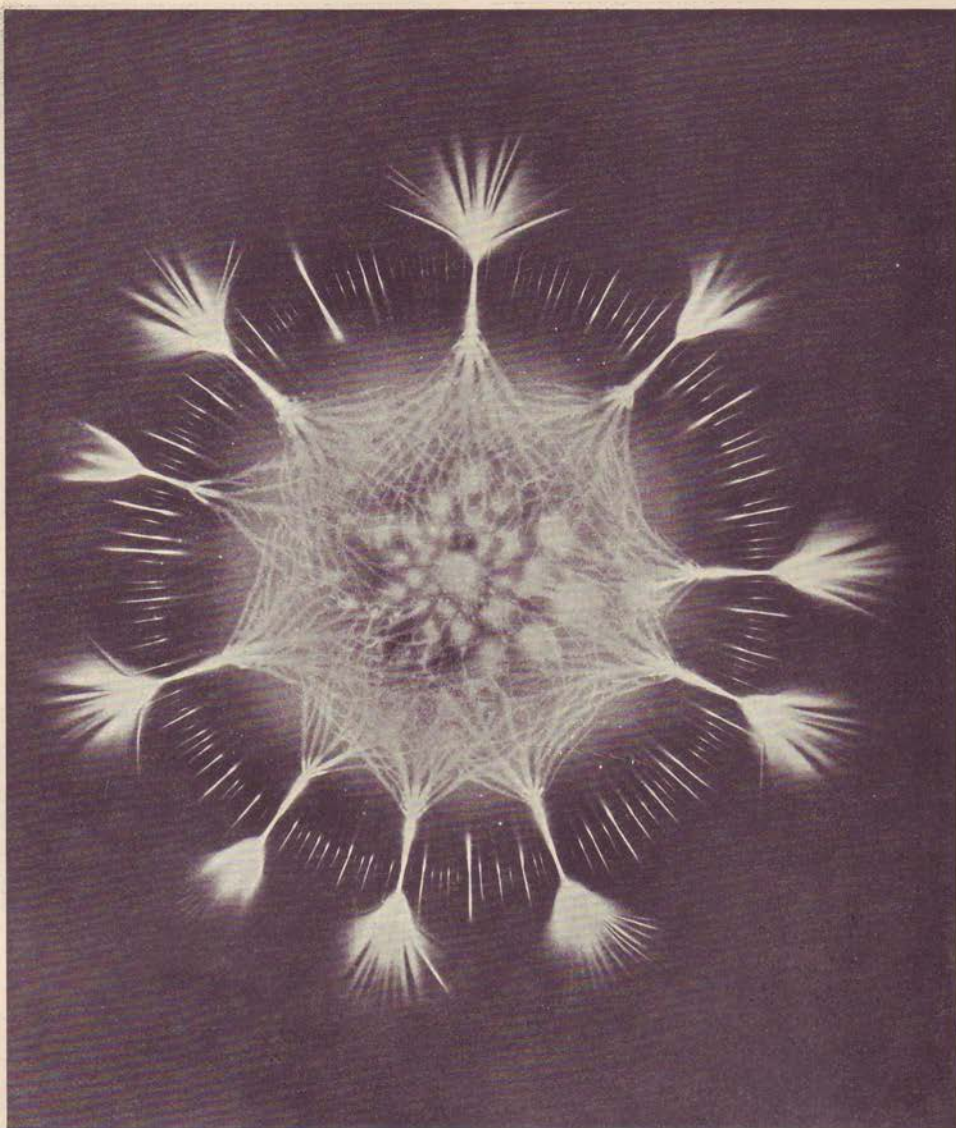


PLATE IV. SYMMETRICAL GROUP OF ELECTRIC ENTITIES.

Each comet structure in the group is a record of the entire history of a small quantity of electric energy.

In general terms, the spindle of one of these comet structures represents the dynamic center of a discharge, for each tiny comet records the entire evolution of an electric discharge, and the phases through which it passes are identical with those through which every uninterrupted discharge must pass.

That this spindle has never before been shown in any photographs of electricity is due to the fact that no apparatus has ever before been constructed whereby the entire action of an electric discharge through the air could be recorded. In the action of the energy in Plate III its moment of greatest

focalization was during its passage through the metallic bar. Hence its form could not be recorded.

Examine for a moment this spindle (see Plate V). It seems to be wound in a conical spiral, as if the lines of energy, which focalize at the point of greatest intensity, assume at once a spiral motion. This spiral whirl is at first very narrow, but as it passes away from the point of greatest intensity, it becomes wider, and its whirls are farther apart. Under favorable conditions they are far enough apart to be seen, forming a sharply pointed cone with a very small base. Thus it seems

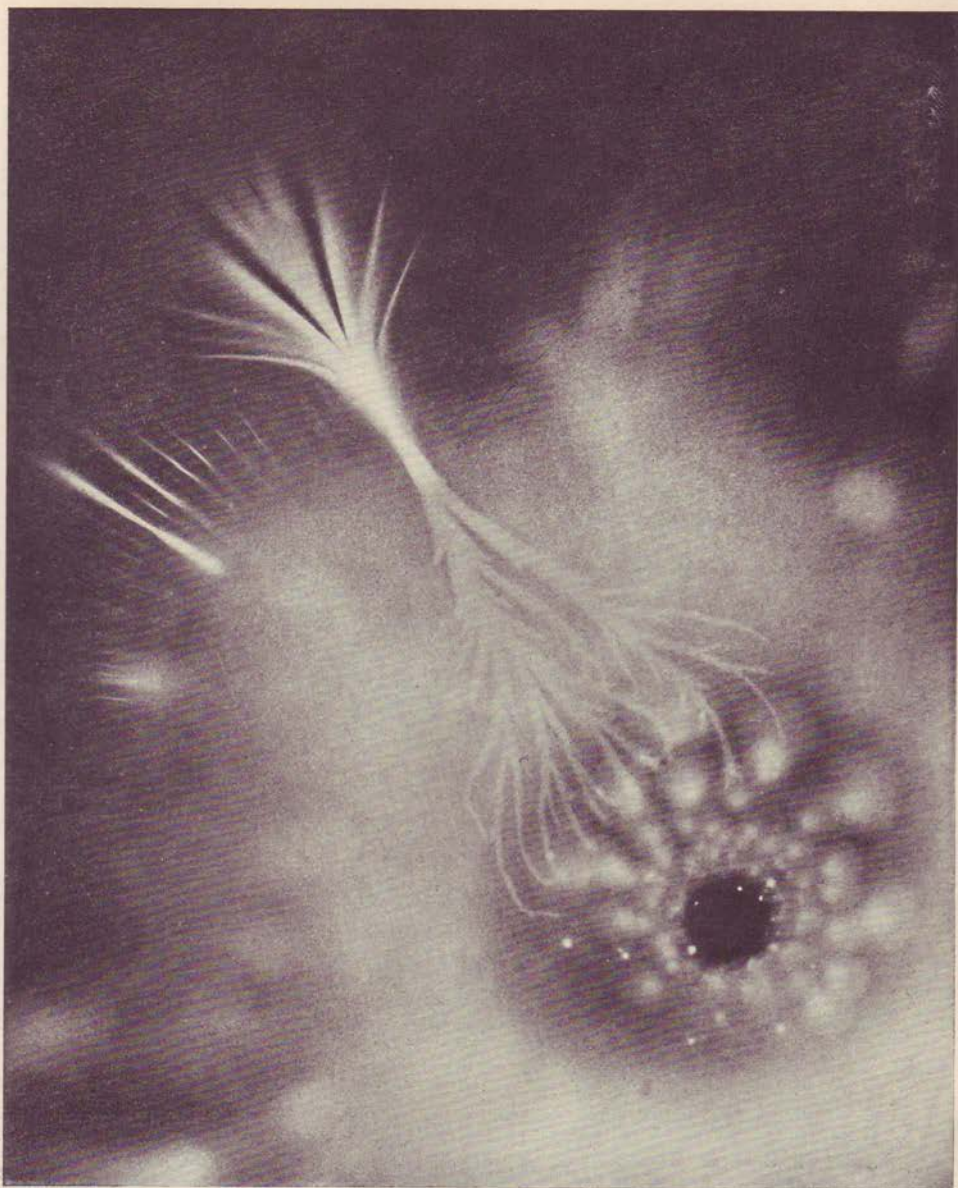


PLATE V. ELECTRIC ENTITY, OR EMBODIMENT OF ELECTRIC FORCE. (ENLARGED.)

that the electric energy focalizing at this point translates itself, by means of the electromagnetic action which takes place in the spindle, from its negative phase into a curiously interacting form, the positive phase.

Mr. Kinraide's conclusions may be summarized as follows: The plates here shown, especially those which record the action of the electric entity, form an electrographic demonstration of the meaning of the terms positive and negative electricity. When electric energy changes from a condition of diffusion to a center of focalization it is

passing through its negative phase. When it changes from a condition of focalization to a condition of diffusion it is passing through its positive phase. These two conditions may be correctly termed the anodos, or going in, and the exodos, or going out, of electric energy. They are unmistakably recorded on the photographic plates, which show that there are not two separate electricities, but one developing entity of energy. There is no photograph of the diffused condition in either case. It is only when the energy is passing through one or the other

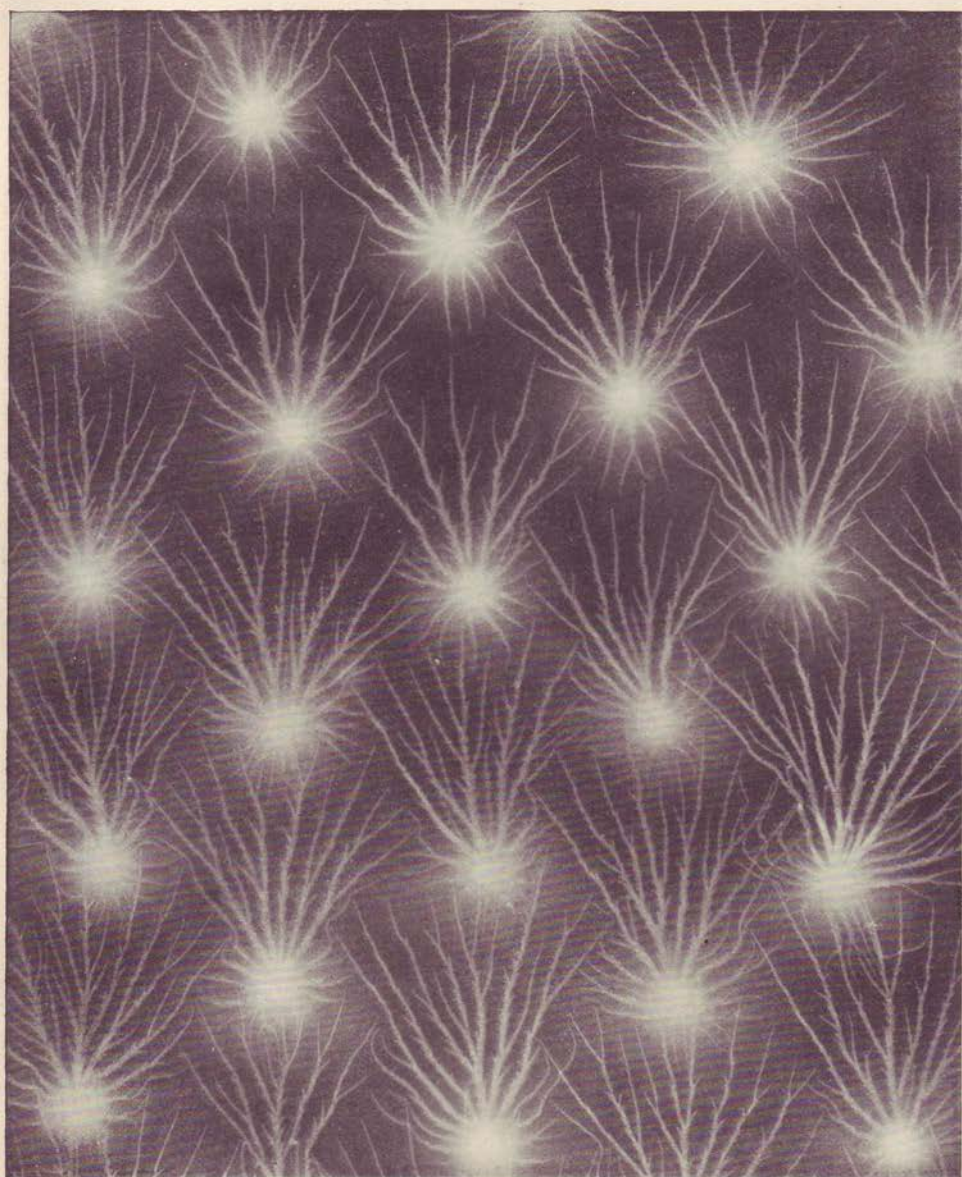


PLATE VI. POSITIVE ENDS OF ELECTRIC ENTITIES.

A discharge from a metallic roller in its passage over the film side of a photographic plate placed upon the uncoated, negative surface of a charged condenser. The conditions of electrification here are the opposite of those in Plate VII.

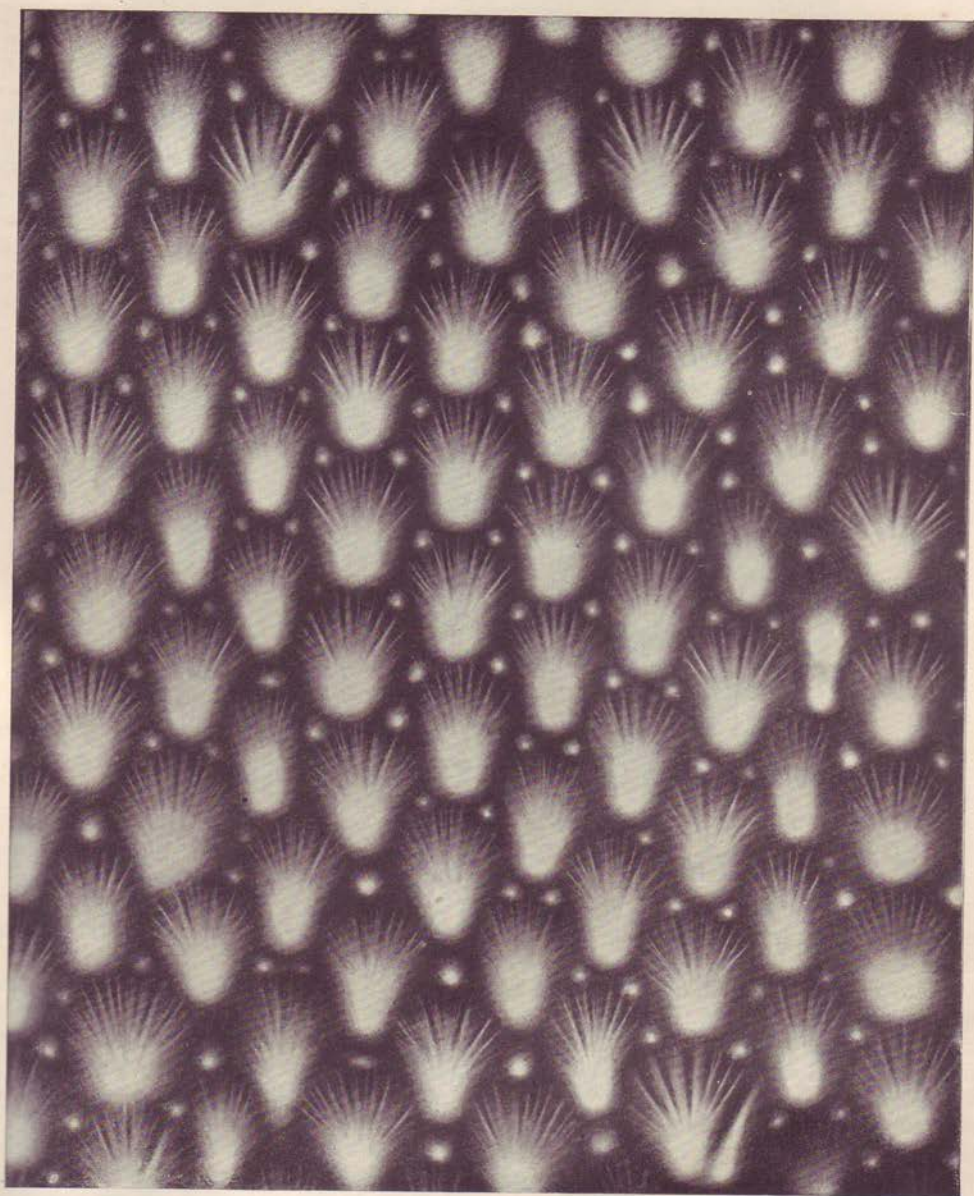


PLATE VII. NEGATIVE ENDS OF ELECTRIC ENTITIES.

A discharge from a metallic roller in its passage over the film side of a photographic plate placed upon the uncoated, positive surface of a charged condenser. This plate is a companion to Plate VI.



PLATE VIII. ELECTRIC ENTITIES IN SERIES.

A discharge between plates produced by the passage of a metallic roller over a photographic plate laid film side down upon a positively charged, uncoated condenser surface.

of its three phases that it becomes manifest upon the sensitive plate.

Plate V is an enlarged record of one small quantity of electric energy: its origin, or negative phase; its transformation, or dynamic phase; its final diffusion, or positive phase. In the negative phase the energy consists of numerous units of energy uniting to produce a single unit, which, after spiraling through a small space, is changed into a number of streamers to be again diffused.

Plates VI and VII, which show respectively the positive and negative ends of electric entities, belong to the condenser series. As explained in the lines under them, they were secured by means of a roller passing over the surface of the photographic plate. Plate VI shows the outrushing or positive ends of the tiny entities that shoot off from the roller on to the negatively electrified plate as the roller is passed over the plate. Plate VII shows the retreating or negative

ends of the entities that rush from the positive plate into the negative roller.

Plate VIII shows how comets in series are formed when the energy *between* condenser surfaces is permitted to escape into a metallic roller passed over the outer surface of the plate. This was secured by placing the photographic plate film side down.

The photographs here reproduced form a representative selection from many hundreds secured by Mr. Kinraide. They are much reduced in size, the negatives being eighteen by twenty-two or eight by ten inches. A set consisting of about fifty photographs has recently been presented to the Massachusetts Institute of Technology, where it is available to students and other interested persons.

The conclusions as to the nature of electricity reached by Mr. Kinraide through his study of its movement differ to a considerable extent from those reached by Lord Armstrong, the noted English scientist who

has conducted experiments along similar lines. Lord Armstrong has secured some extremely interesting photographs of the phenomena resulting from discharges of electricity over dust plates. He has also experimented with photographic plates, and a number of the results secured in both cases bear an interesting resemblance to those obtained by Mr. Kinraide. Lord Armstrong has not, however, shown the development of the electric entity.

It may be interesting to add that, as a result of his study of electric energy as manifested in these plates, Mr. Kinraide inclines to the theory that every form of energy, as heat, sound, light, gravity, etc., has what he would term an entity of energy, corresponding in structure and function to the electric entity, and that it only requires

a knowledge of how to create conditions in order to demonstrate this.

He asks the interesting questions: "May it not be that the whirlwind and the waterspout proclaim the presence of entities of thermal energy, the whirlpool the presence of an entity of gravity, and the sound-waves recently photographed the presence of the entity of sound force?" He maintains, also, that if the conditions are constant, the entity will be constant. *A prime condition must be that the energy be able to mold the substance which is the medium of its manifestation into its own form.* Its power to do this demonstrates that it is a force-entity. Mr. Kinraide proposes to experiment with other forms of energy and to obtain, if possible, a complete demonstration of this theory.

ALREDEDOR DEL MUNDO

REDACCIÓN Y ADMINISTRACIÓN: Plaza del Progreso, 1, MADRID



Imágenes curiosas de la electricidad

Los grabados que ilustran este artículo constituyen la autobiografía auténtica de ciertas fases de una de las fuerzas más asombrosas y más útiles del mundo: la electricidad.

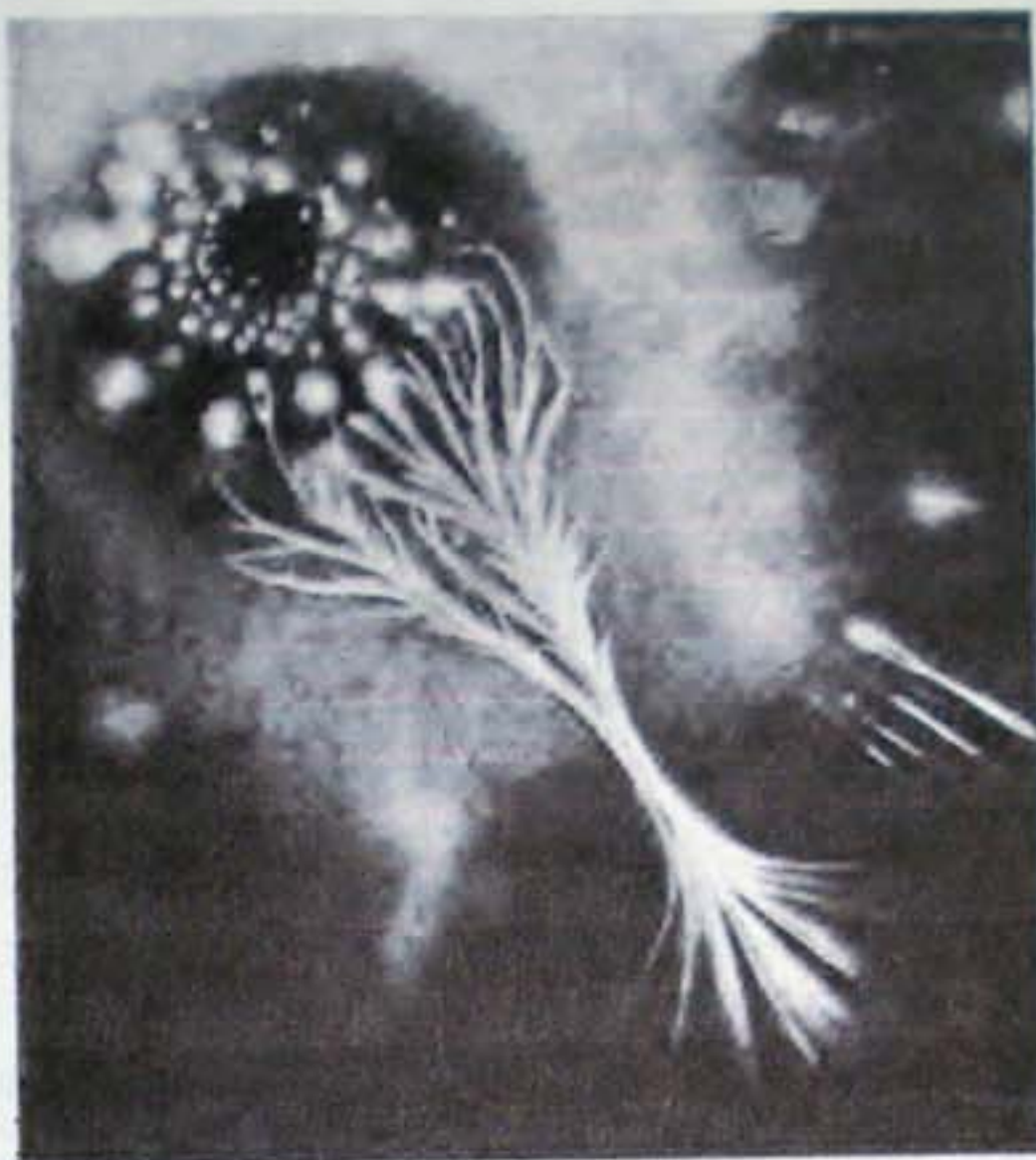
Son el resultado de varios años de trabajos y experimentos realizados por el profesor Burton Kinraide, de Boston, y son la reproducción de descargas hechas por la electricidad sobre placas fotográficas. Estas fotografías ponen de manifiesto la forma y el carácter de las llamadas fases positiva y negativa de la energía eléctrica y de otra faz que nunca ha sido revelada hasta ahora. Señalan un progreso inmenso sobre las que publicamos hace dos años y medio, en nuestro número 33, y ya entonces anunciábamos el adelanto grandísimo que no tardaría en hacerse en esto de fotografiar la energía eléctrica.

En las fotografías puede observarse que las fases negativa y positiva presentan imágenes tan distintas, que jamás pueden confundirse una con otra. La positiva tiene una estructura parecida á la forma de ciertas clases de helechos finos, que Mr. Burton Kinraide llama fili-

nombre de «plumoso». Se han obtenido las electrografías por medio de un aparato condensador, sobre una de cuyas superficies se colocaba la placa sensible.

Esa superficie puede electrificarse positiva ó negativamente, á voluntad del operador. Supóngase que se la electrifica negativamente, y que después se toca en el centro de ella con una pequeña esfera de cobre unida al terminal positivo del aparato; la descarga instantánea de la esfera se precipita en todas direcciones sobre la superficie de la placa y deja en ella su imagen. Si, por el contrario, la superficie del condensador sobre la cual se pone la placa sensible, está electrificada positivamente y que se pone en contacto con ella una esfera de cobre unida al polo negativo, la energía eléctrica se absorberá, como si dijéramos, de la placa, y precipitándose hacia la esfera conductora, dejará en la superficie de la referida placa el rastro de su fugitivo paso.

Las fotografías han sido obtenidas gracias á un aparato perfeccionado; estudiando las descargas eléctricas de este aparato en la oscuridad, Burton Kinraide observó que de la



EN FORMA DE COMETA



LA FAZ NEGATIVA DE LA ELECTRICIDAD

ciforme, mientras que la negativa presenta invariablemente un aspecto suave y plumiforme, al que el investigador ha dado con mucha propiedad el



LA FAZ POSITIVA DE LA ELECTRICIDAD

esfera de cobre de dos pulgadas partían extraños rayos en forma de rama de helecho y de un color de violeta pálido. Empleando esferas de mayor diá-



ENTIDADES ELÉCTRICAS EN SERIES

metro y aumentando la fuerza de la corriente eléctrica, aumentaba igualmente el tamaño de aquellas imágenes luminosas, hasta que llegaban á 30 pulgadas de distancia de la esfera y alcanzaban un grueso de media pulgada. Parecían rayos de color de violeta en forma de horquilla ondeada que surcaban las tinieblas del laboratorio.

Balanceando una placa fotográfica ordinaria sobre la parte alta de la esfera con la película hacia abajo, y abriendo y cerrando una vez el circuito, se obtenía una fotografía de las rápidas y ondulantes imágenes. Eran las fotografías de la faz positiva ó filiciforme de la energía eléctrica.

Invirtiéndola corriente se observaba un fenómeno distinto. En vez de rayos bifurcados de luz violeta, aparecían formas plumosas. Se trató de fotografiarlas, y aunque se pusieron las placas á la distancia debida y se manipuló con habilidad la corriente como en el experimento anterior, no pareció imagen alguna al ser revelada la placa. Repitióse una y otra vez la prueba, sin conseguir resultado alguno. La corriente eléctrica, que tomaba la caprichosa forma de suaves plumas, se negaba á impresionar las placas.

Dos años duraron los experimentos sin que se gastaran la paciencia y el bolsillo de Burton Kinraide, hasta que éste descubrió que las formas plumosas no eran, como había creído, descargas de la esfera de metal hacia afuera, sino descargas, hacia adentro, del aire que rodeaba la esfera.

El descubrimiento de este hecho es de la mayor importancia. Pareció probar que la energía eléctrica no es una fuerza dual con una actividad dual. Además, demuestra claramente que los fenómenos llamados positivo y negativo indican el uno la acumulación de energía eléctrica, y el otro la descarga de ésta. Burton Kinraide comprendió que para fotografiar la llamada electricidad negativa tenía que electrificar la placa y descargarla después en algún conductor.

Otro descubrimiento importante encierran los trabajos fotográficos hechos por este investigador.

Sus placas acusan la existencia de formas eléctricas en forma de cometas, en las cuales se unen la electricidad positiva y la negativa. Kinraide las llama fotografías de la «entidad eléctrica», porque suman en su imagen la actividad completa de una pequeña suma de energía eléctrica, con su origen, crecimiento y su muerte ó dispersión.

La centro ó parte más gruesa no es positiva ni negativa. Las fases por que pasa la electricidad en una de estas cometas deben ser idénticas á aquellas por las cuales pasa toda corriente no interrumpida.

Burton Kinraide confía en que así como ha logrado fotografiar la entidad de la energía eléctrica, fotografiará también, á fuerza de constancia, las entidades de la energía termal, la fuerza de gravedad, etc., lo mismo que recientemente se han obtenido fotografías de las ondas sonoras.

Volcanes y terremotos

PRONÓSTICO CUMPLIDO

En mi artículo que publicó ALREDEDOR DEL MUNDO el 4 de Julio, creí poder anunciar, precisamente para el dicho 4 de Julio, el principio de un nuevo período volcánico, y añadí que el 20 de Julio y el 2 de Agosto, por virtud de la posición de la luna, del sol y otros astros, eran otras dos fechas de recrudecimiento sísmico.

Hasta ahora, los hechos han venido á darme la razón. En efecto, el 4 de Julio, según leo en varios periódicos austriacos, el seismógrafo del observatorio de Laibach (Austria) registró un temblor de tierra que se calculó haberse verificado á una distancia aproximada de 1.000 kilómetros en dirección de los Balkanes, y efectivamente, poco después recibió el observatorio un telegrama anunciándole que en Salónica, á las cuatro y doce segundos de la tarde, había habido un fuerte temblor de tierra. Luego se supo que el fenómeno se había producido en toda aquella región, afectando especialmente á Andrinópolis, Vodená, Rasluck, Neorekop, Petritsch, Melnik, Karaferia, Gyesogelus, Strumitza, Demir-Hissari, Seres, etc. En Salónica oscilaron las flechas de los alminares, describiendo arcos en el aire, muchas casas se agrietaron, y perecieron algunas personas. Al día siguiente, 5 de Julio, se repitieron las sacudidas, y haciendas enteras de los pueblos circunvecinos cayeron sepultadas en las simas abiertas por los terremotos. Al *Daily Express*, de Londres, le telegrafian que dos aldeas que tenían más de 200 casas, quedaron destruidas por completo.

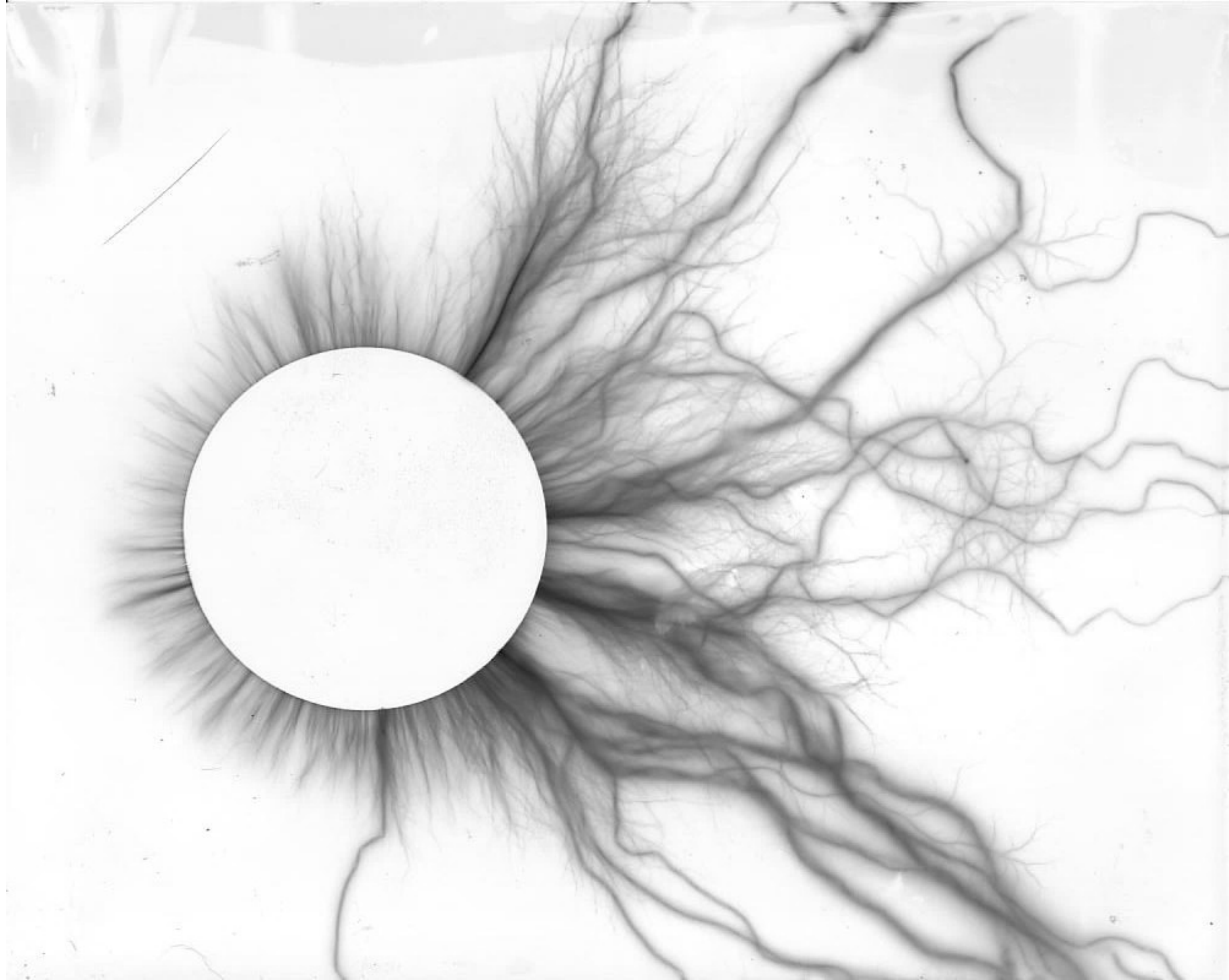
Desde entonces la tierra no ha cesado de temblar, y sacudidas más ó menos violentas han sido experimentadas en varios puntos del globo.

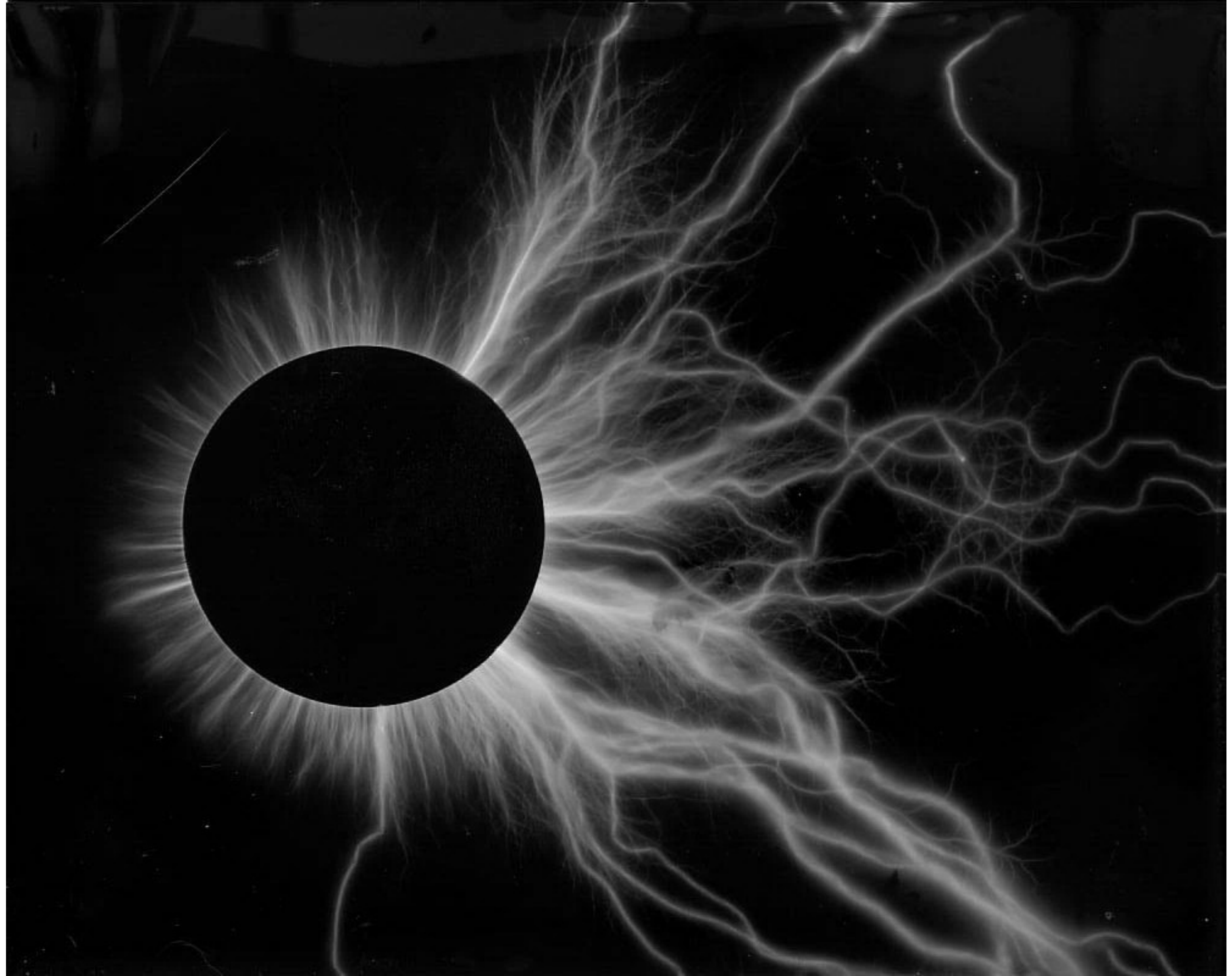
Según telegrafian de Fort de France, el día 7 hubo una nueva y terrible erupción en el Monte Pelado (Martinica), la cual duró treinta minutos, hasta las doce de la noche. Los hilos telegráficos fueron quemados por las tremendas energías eléctricas que se desprendían del suelo, producidas por el movimiento del mismo. Una lluvia espesa de cenizas y piedras cayó sobre los pueblos de Morne-Rouge y Font Saint-Denis. El día 9, según se desprende de los telegramas de los periódicos de París, hubo otra erupción que duró veinticinco minutos.

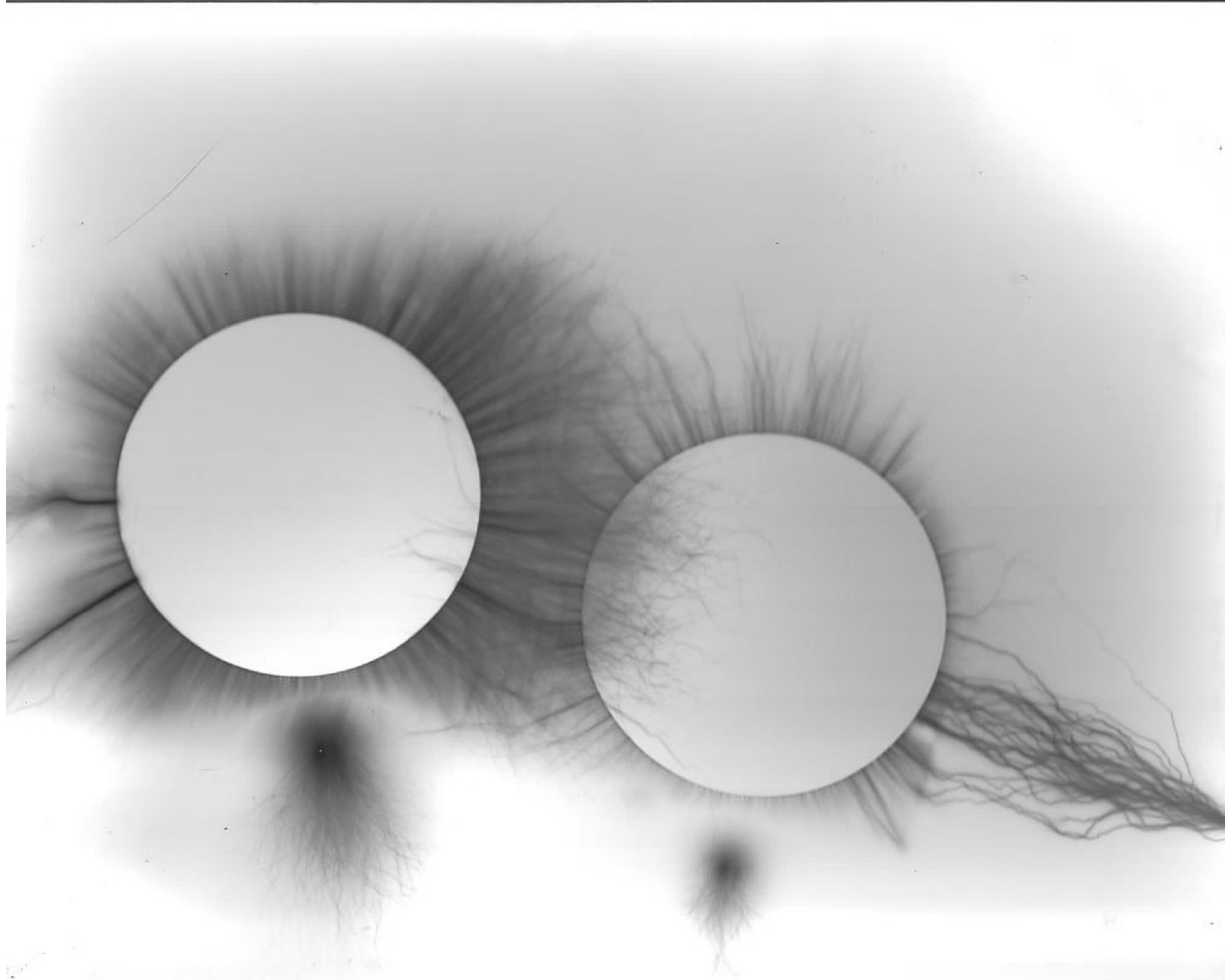
Según telegrafaron desde Nueva York á *El Imparcial*, desde el día 4 de Julio los volcanes Miravallés y Rincón, situados respectivamente á 80 y 60 millas al Sudeste de los lagos de Nicaragua, están dando señales de actividad.

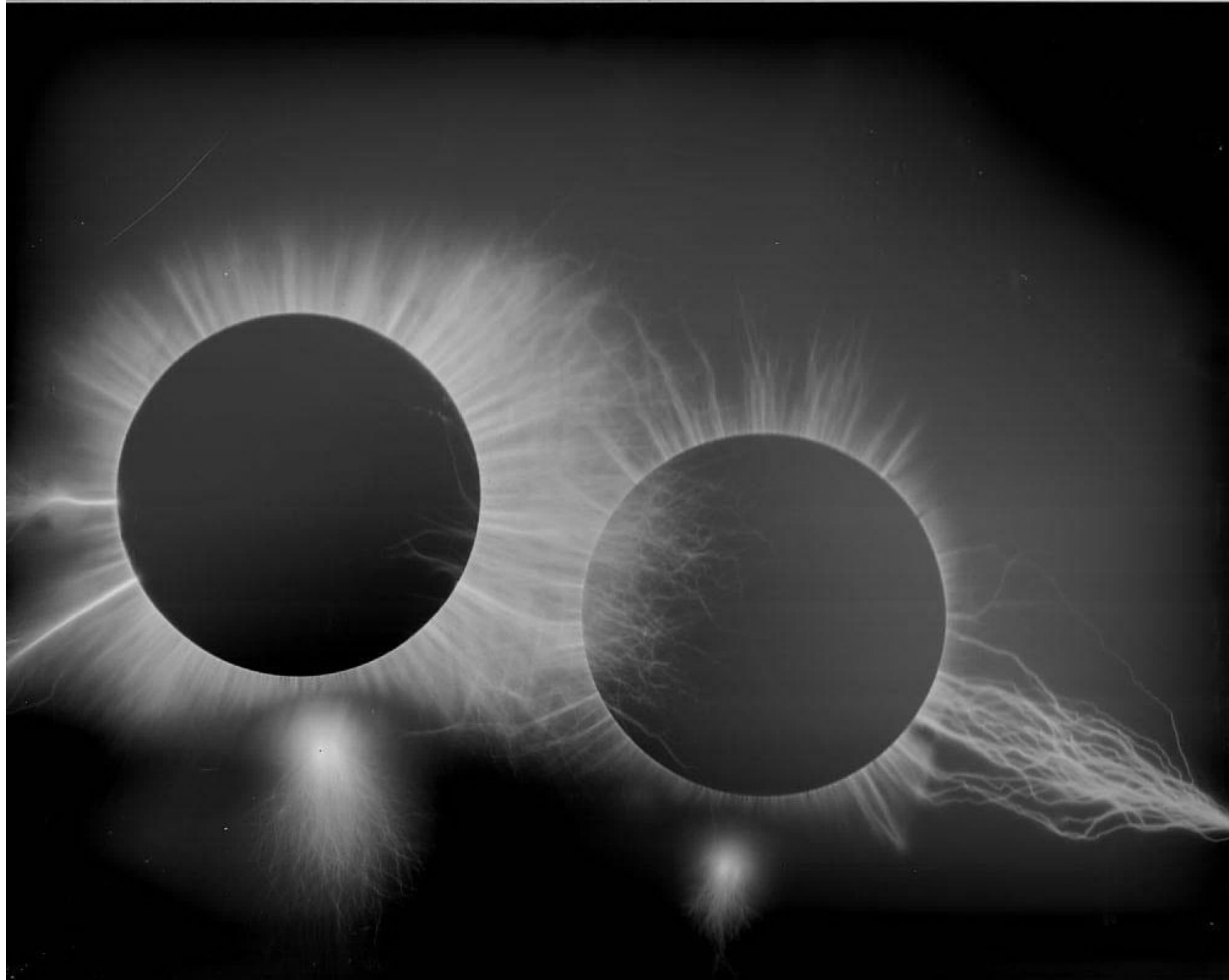
Por fin, el 9 del actual, á la una y media de la madrugada, se sintió en Melilla un violentísimo terremoto, con oscilación de Este á Oeste, que duró tres ó cuatro segundos, oyéndose imponentes ruidos subterráneos.

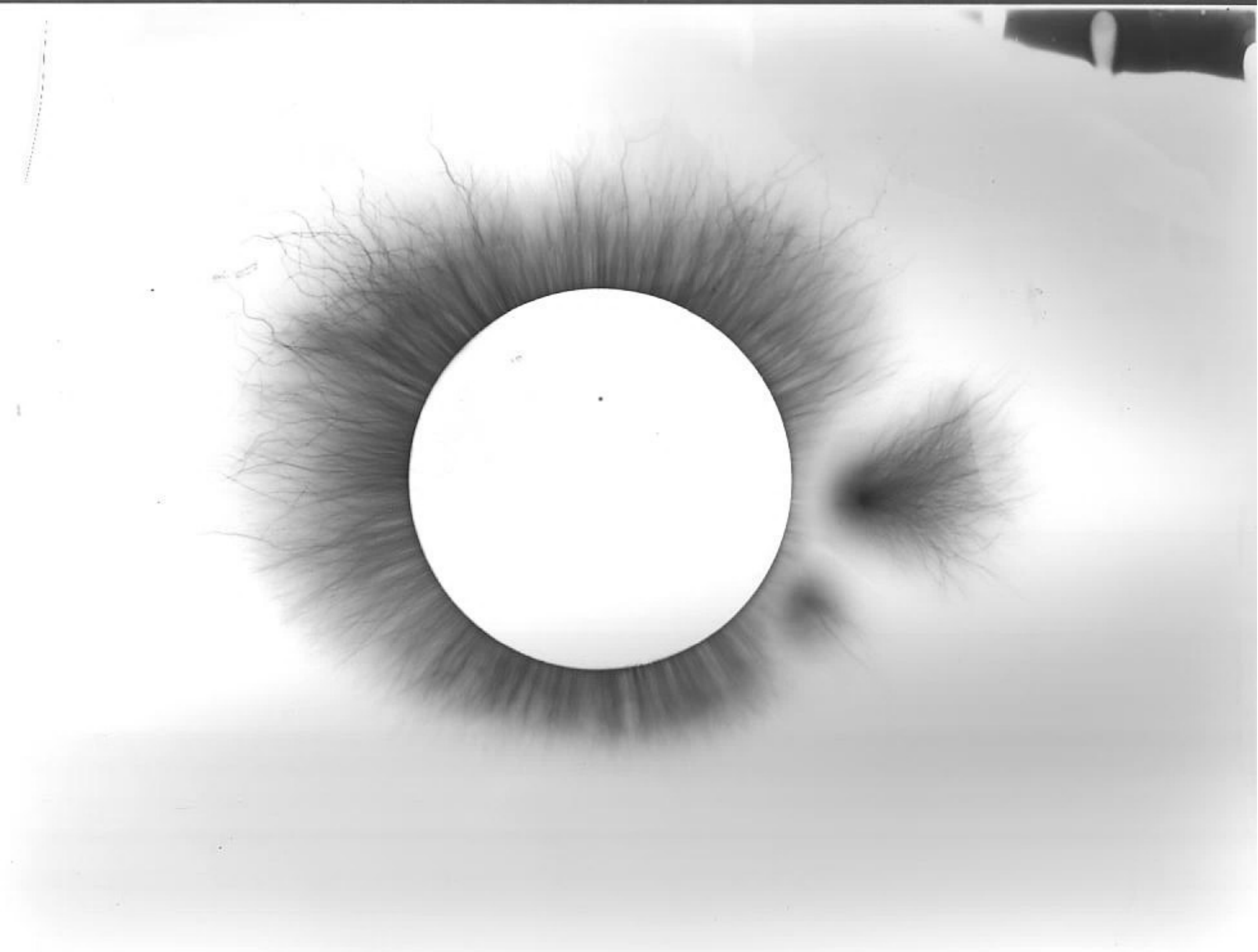
Queda, pues, una vez más demostrada la estrecha relación que existe entre las constelaciones y los fenómenos sísmicos. No se olvide que alrededor del 20 de Julio y el 2 de Agosto hay que esperar más erupciones y terremotos.

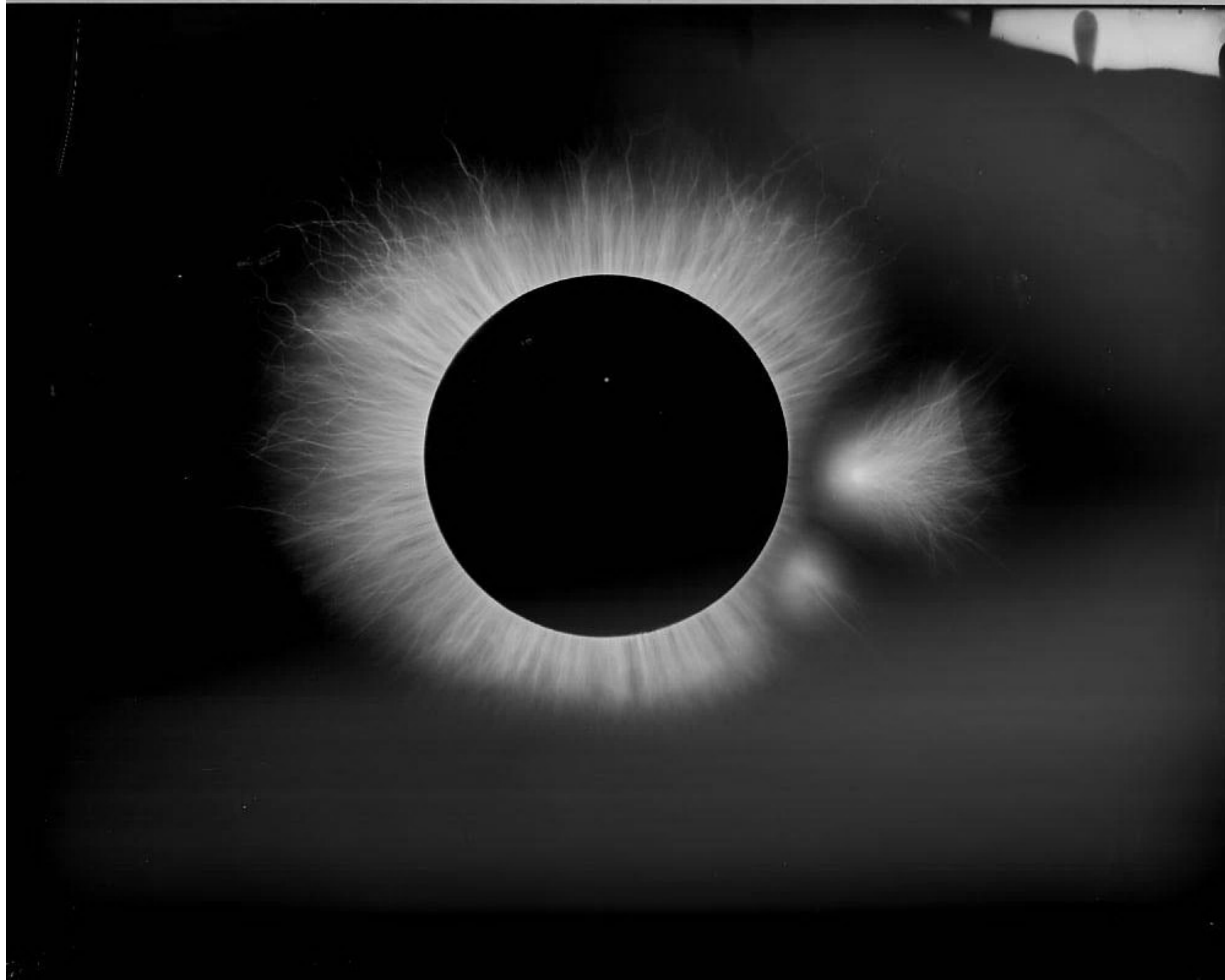


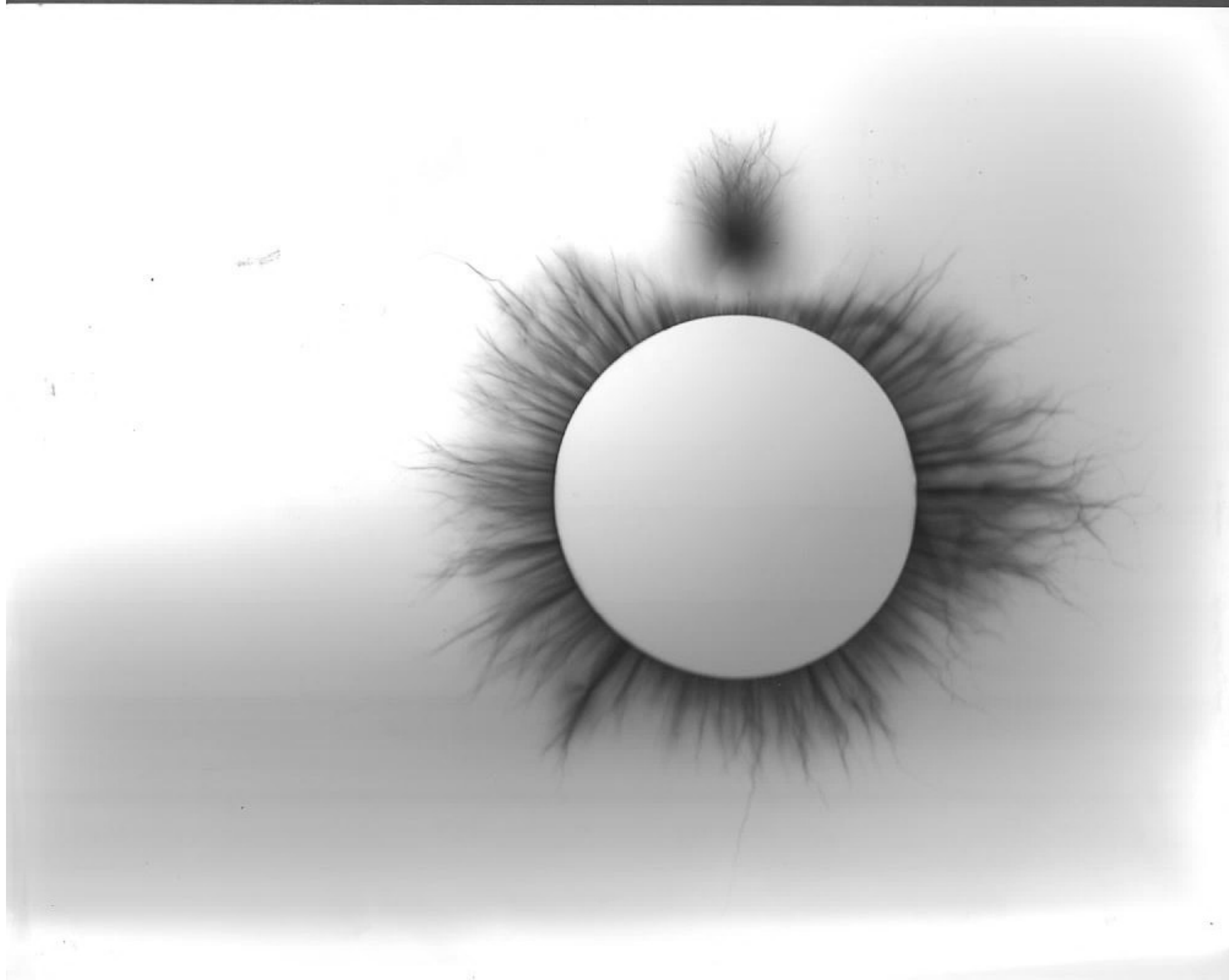


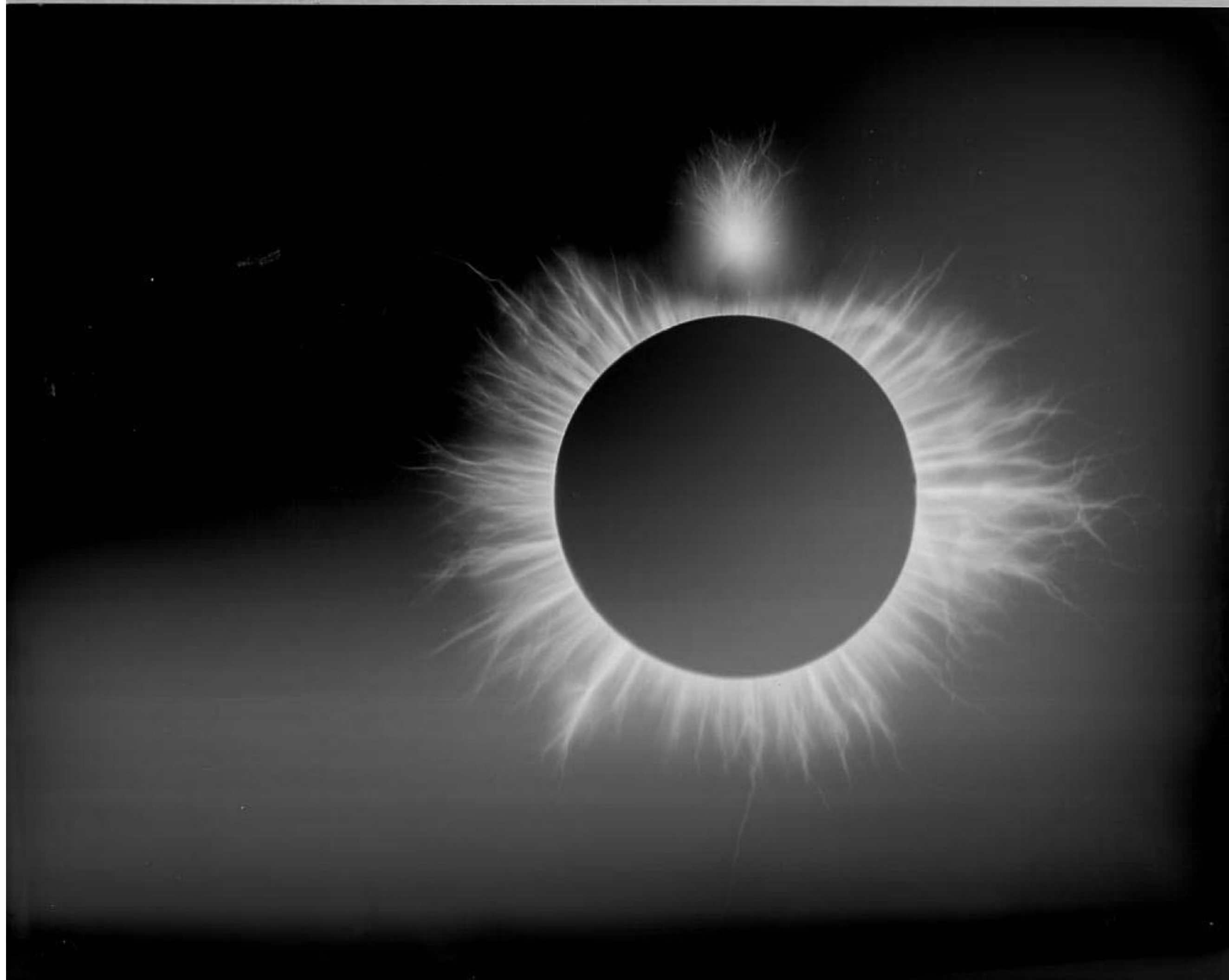


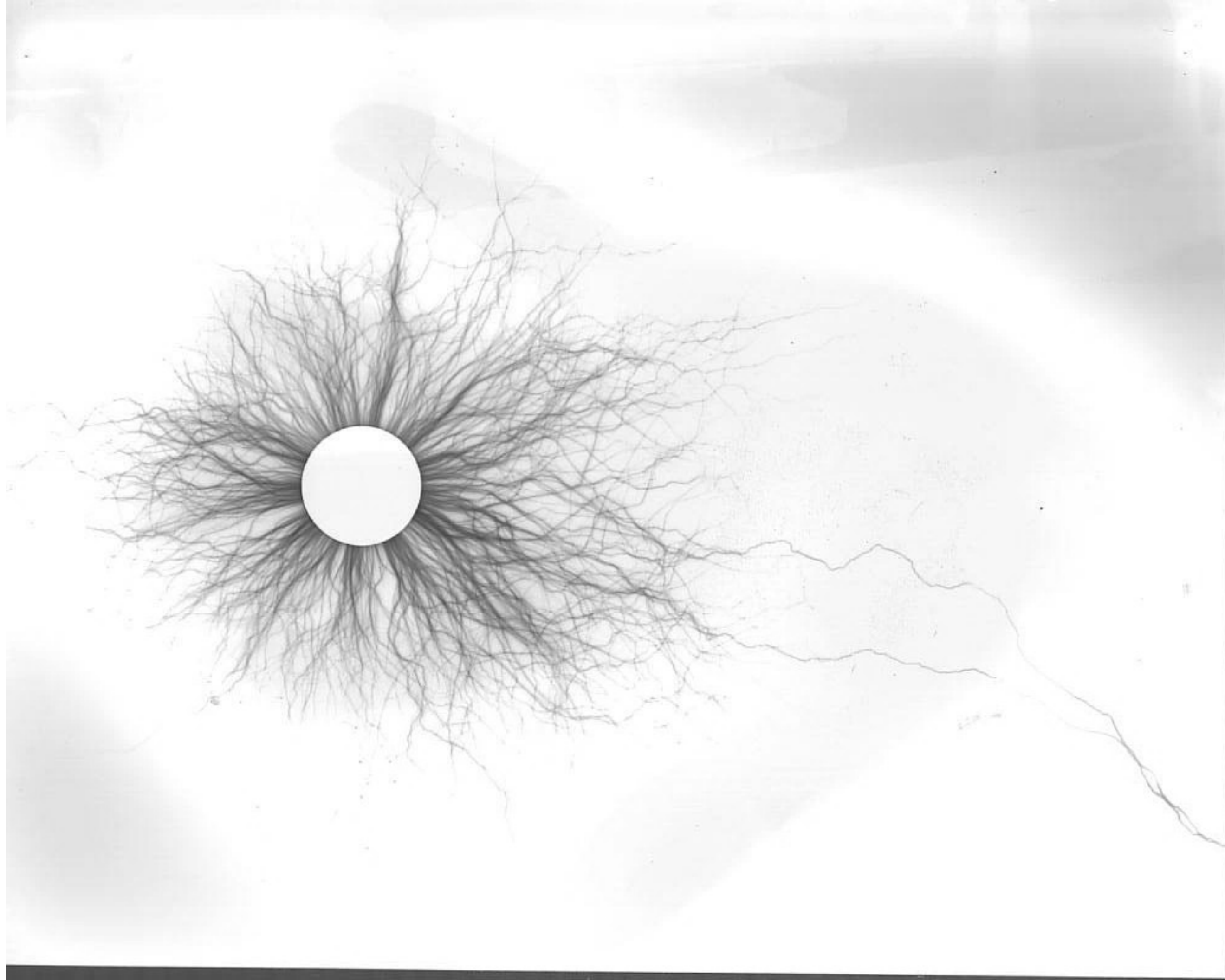


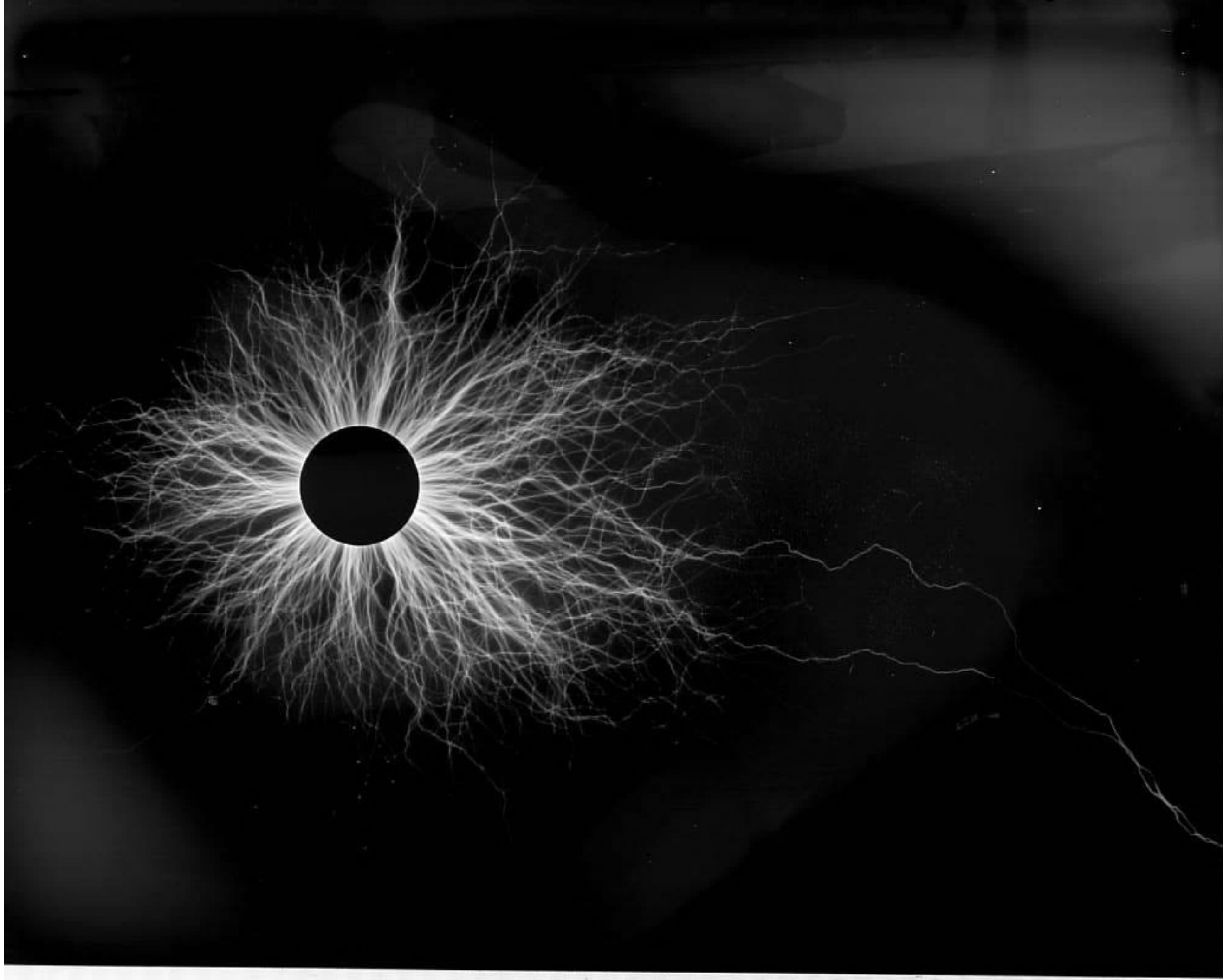


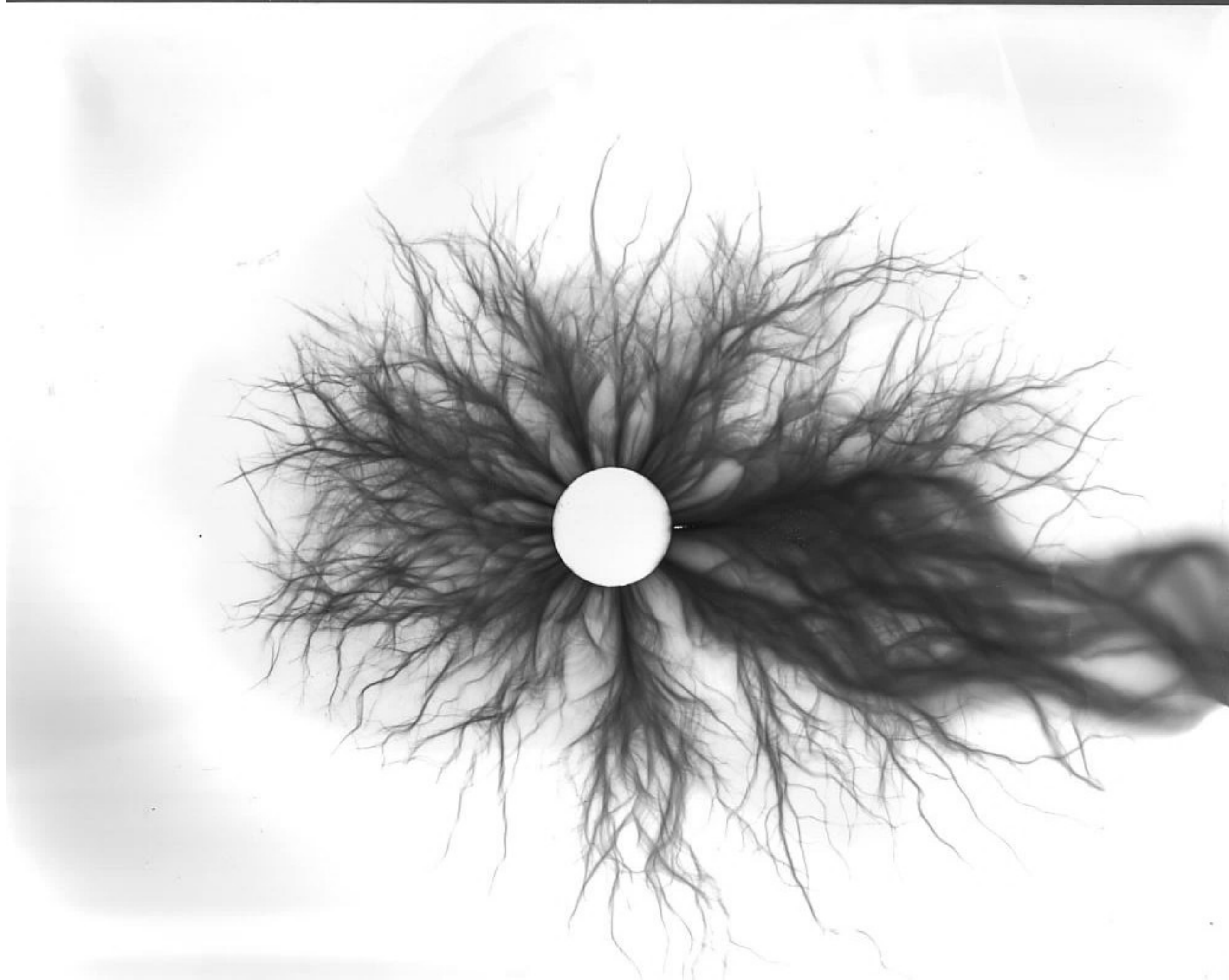


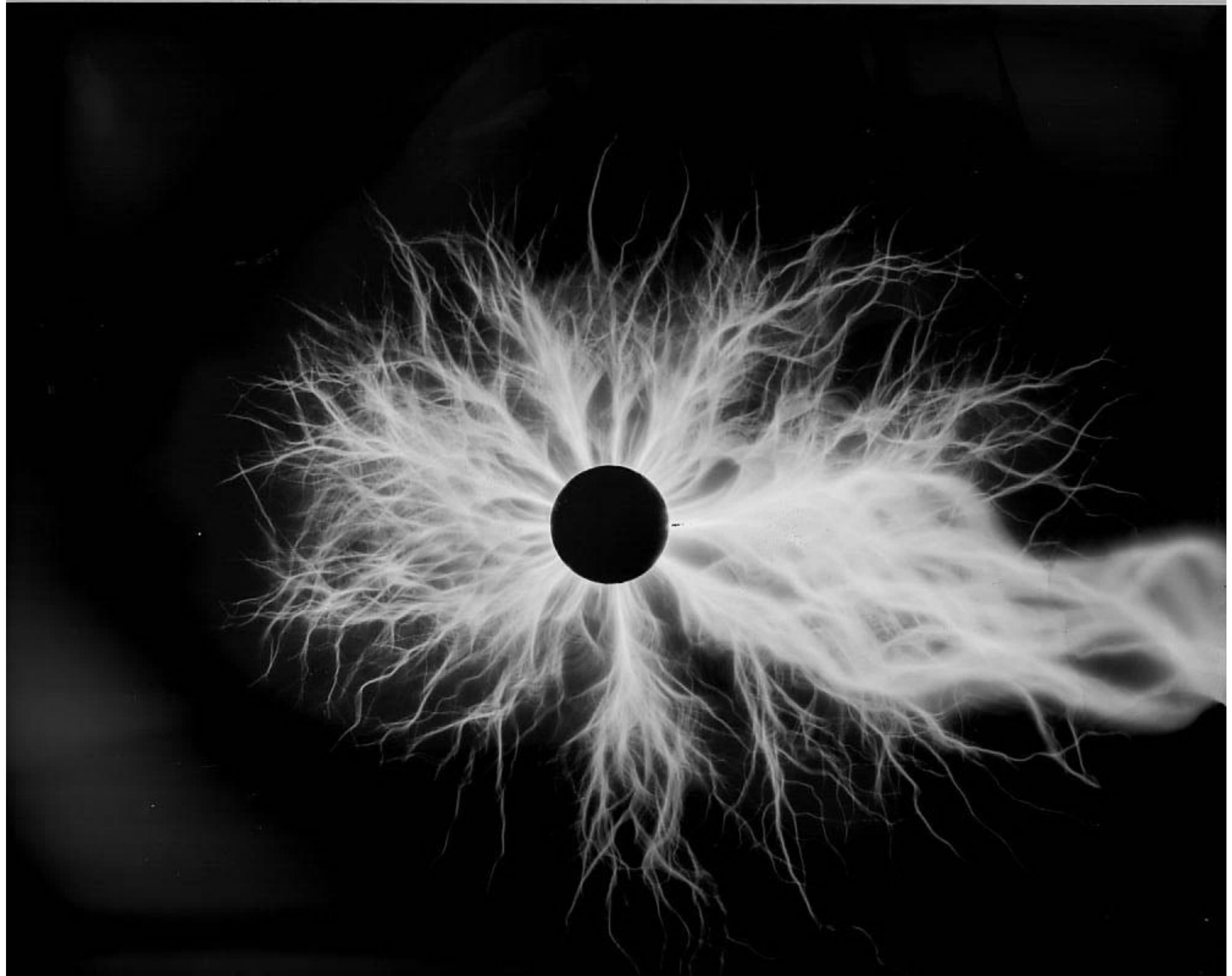


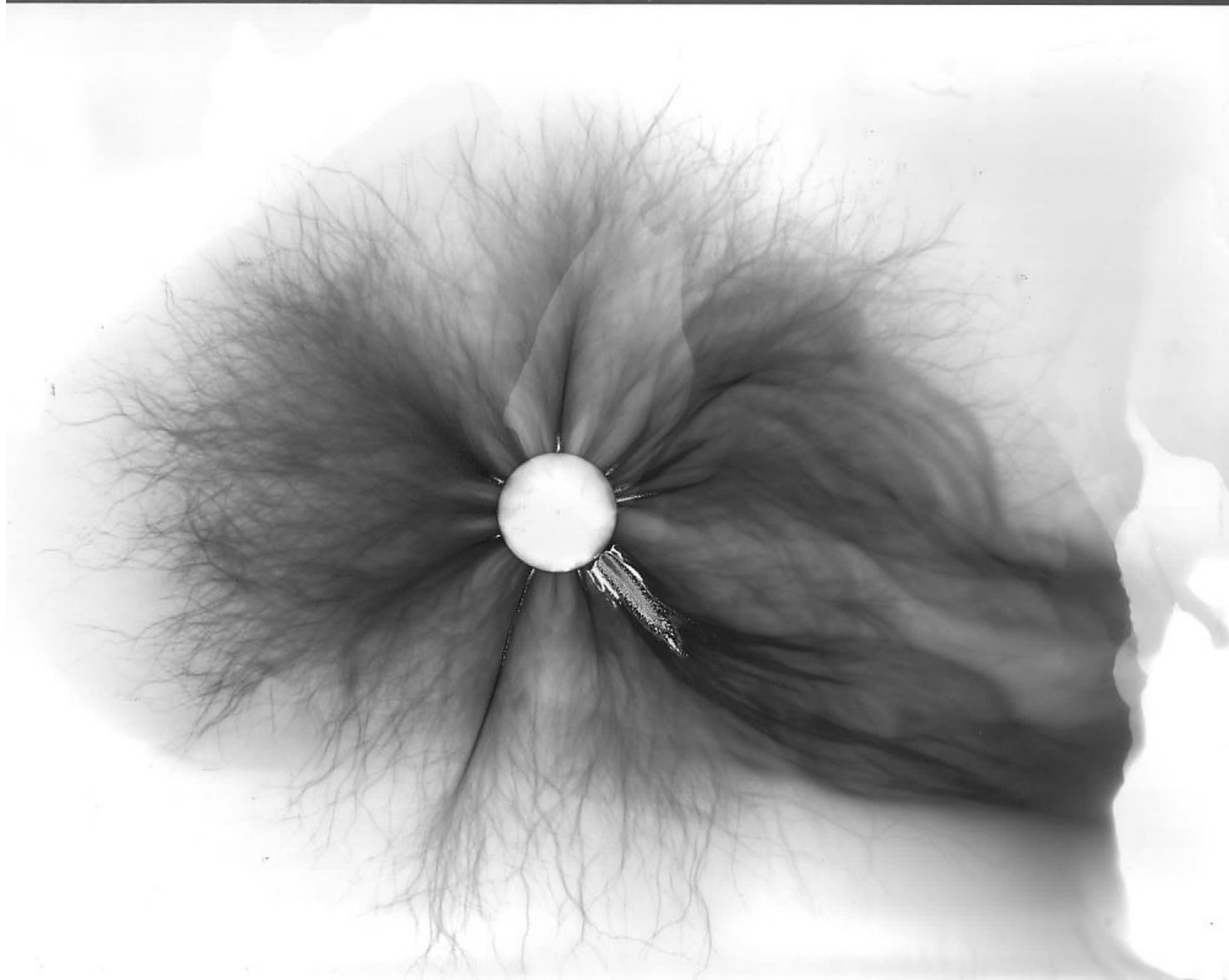


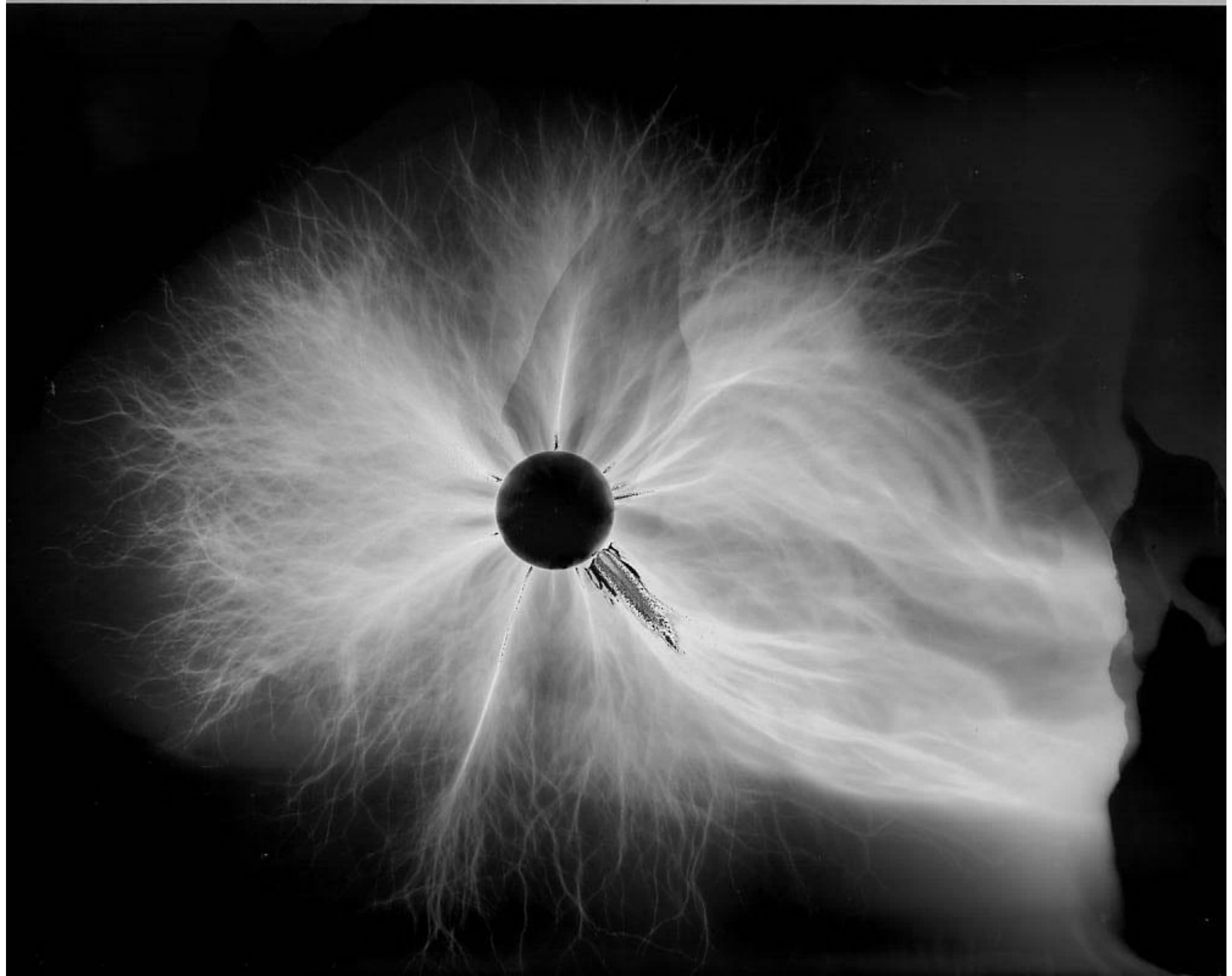


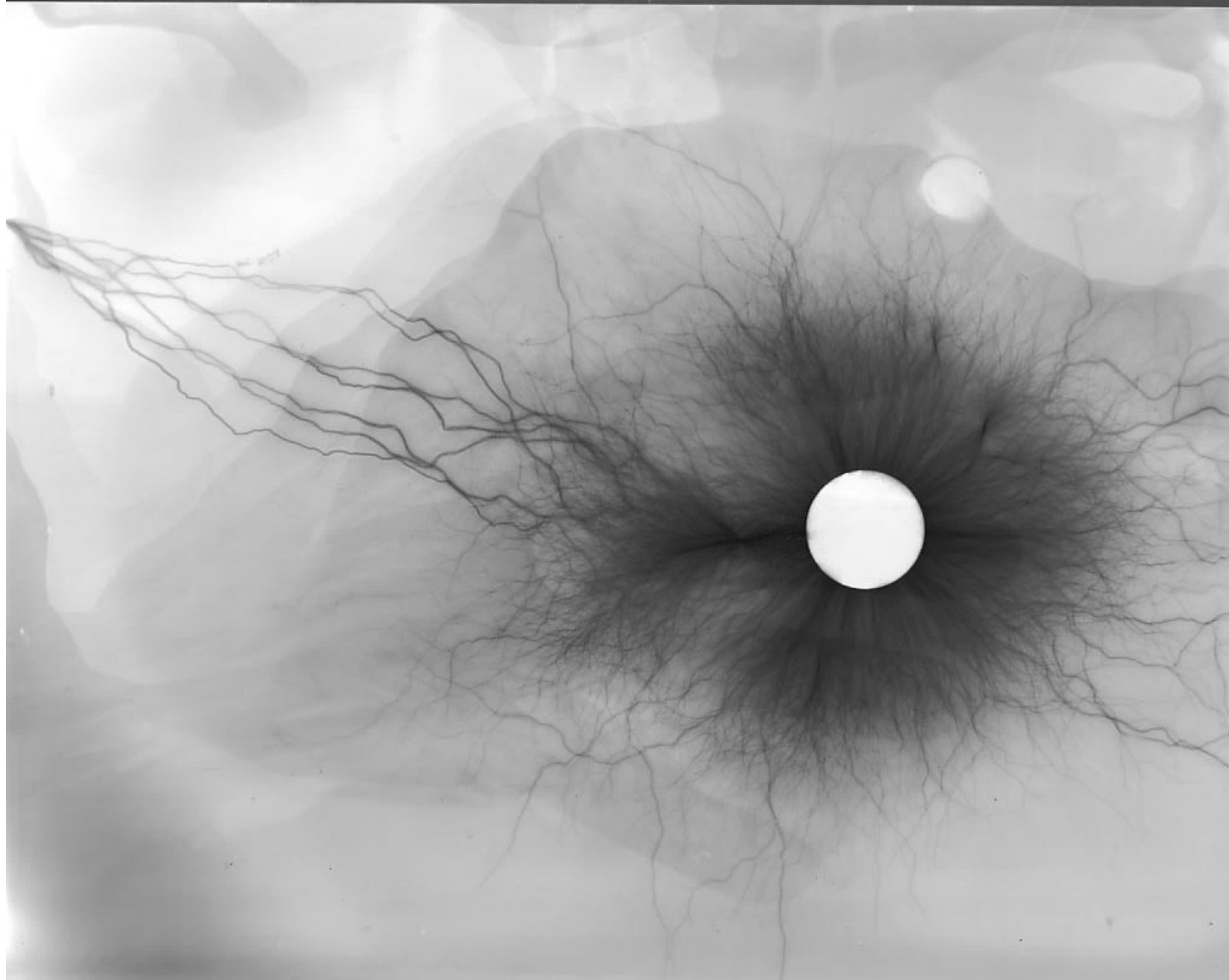


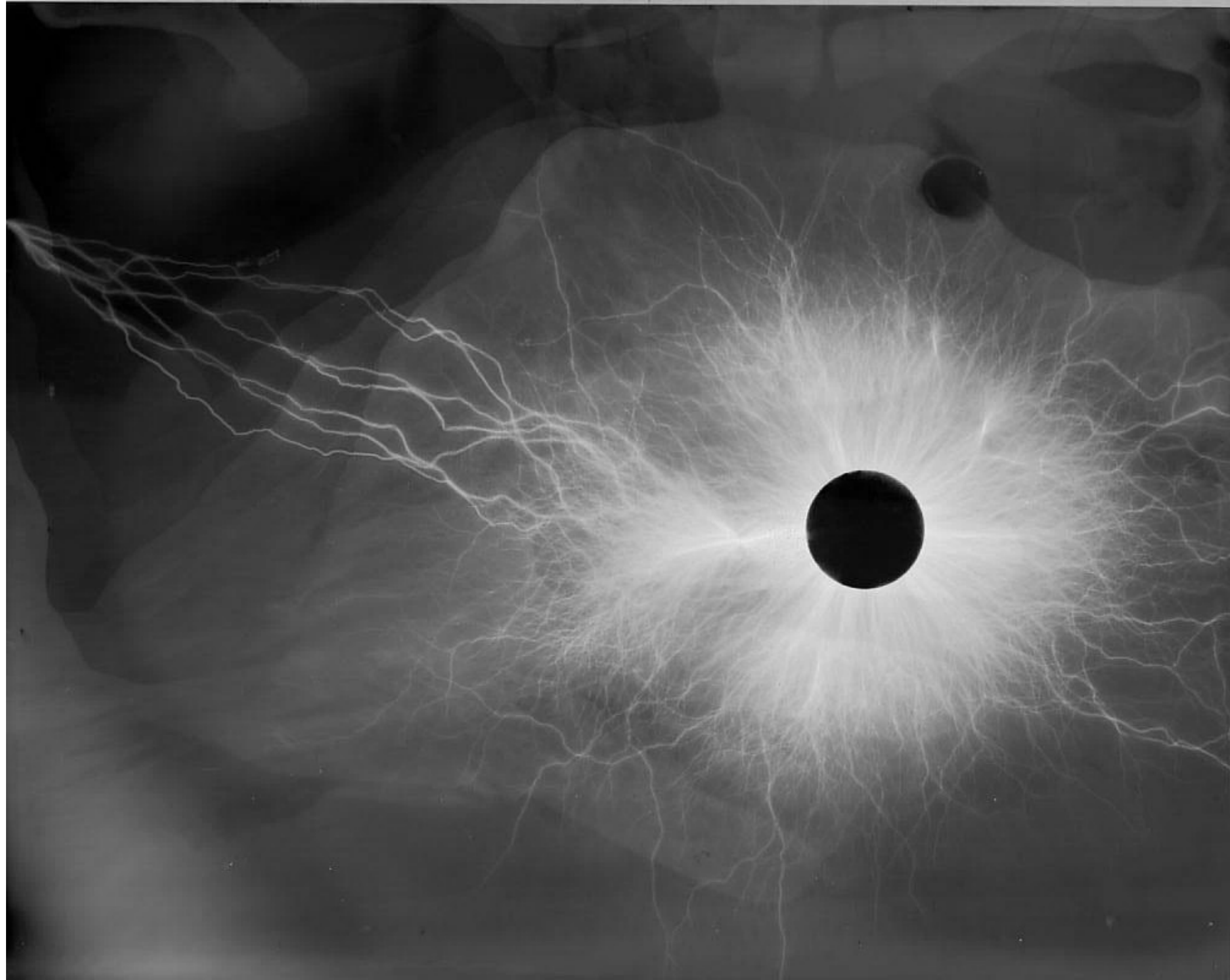


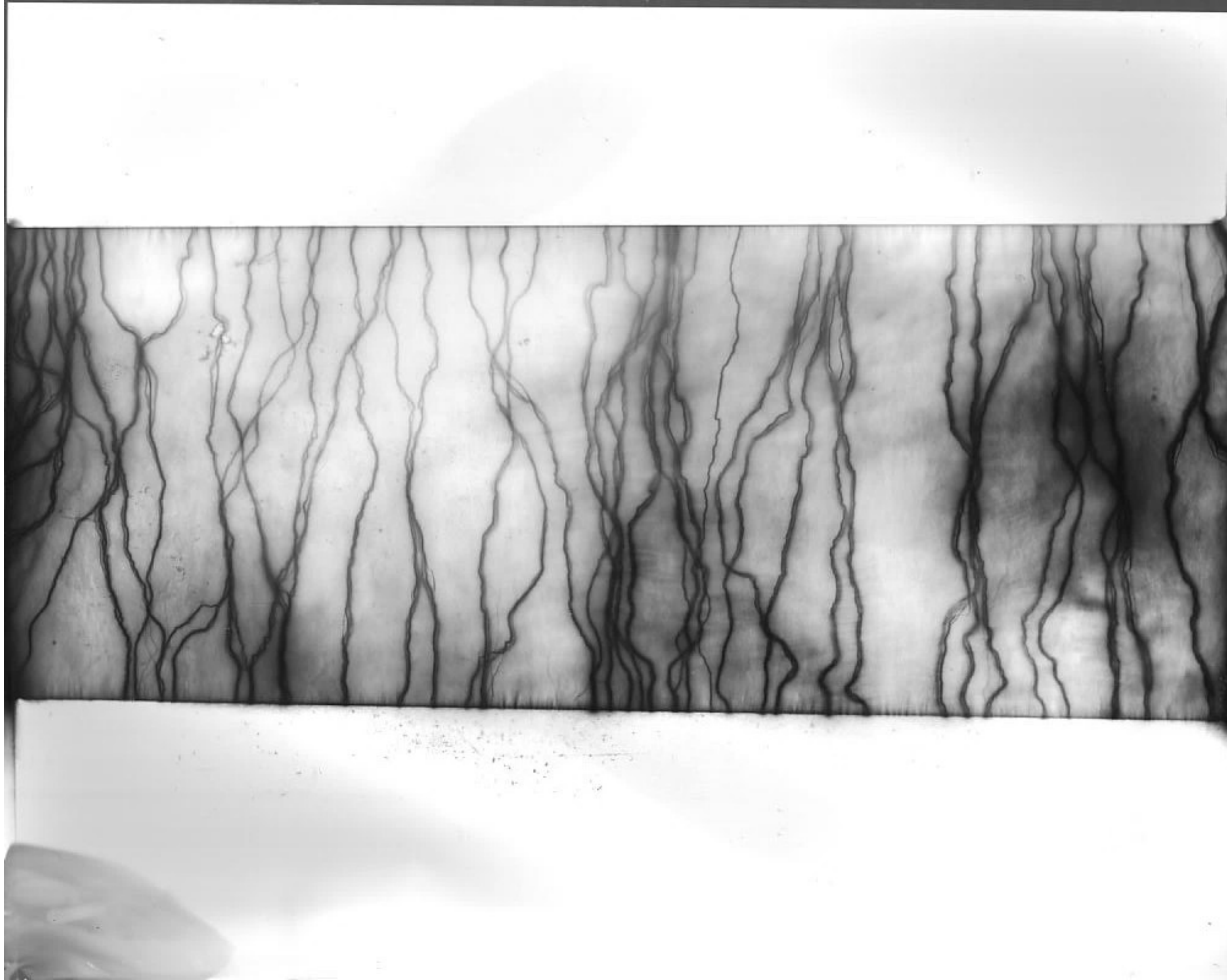


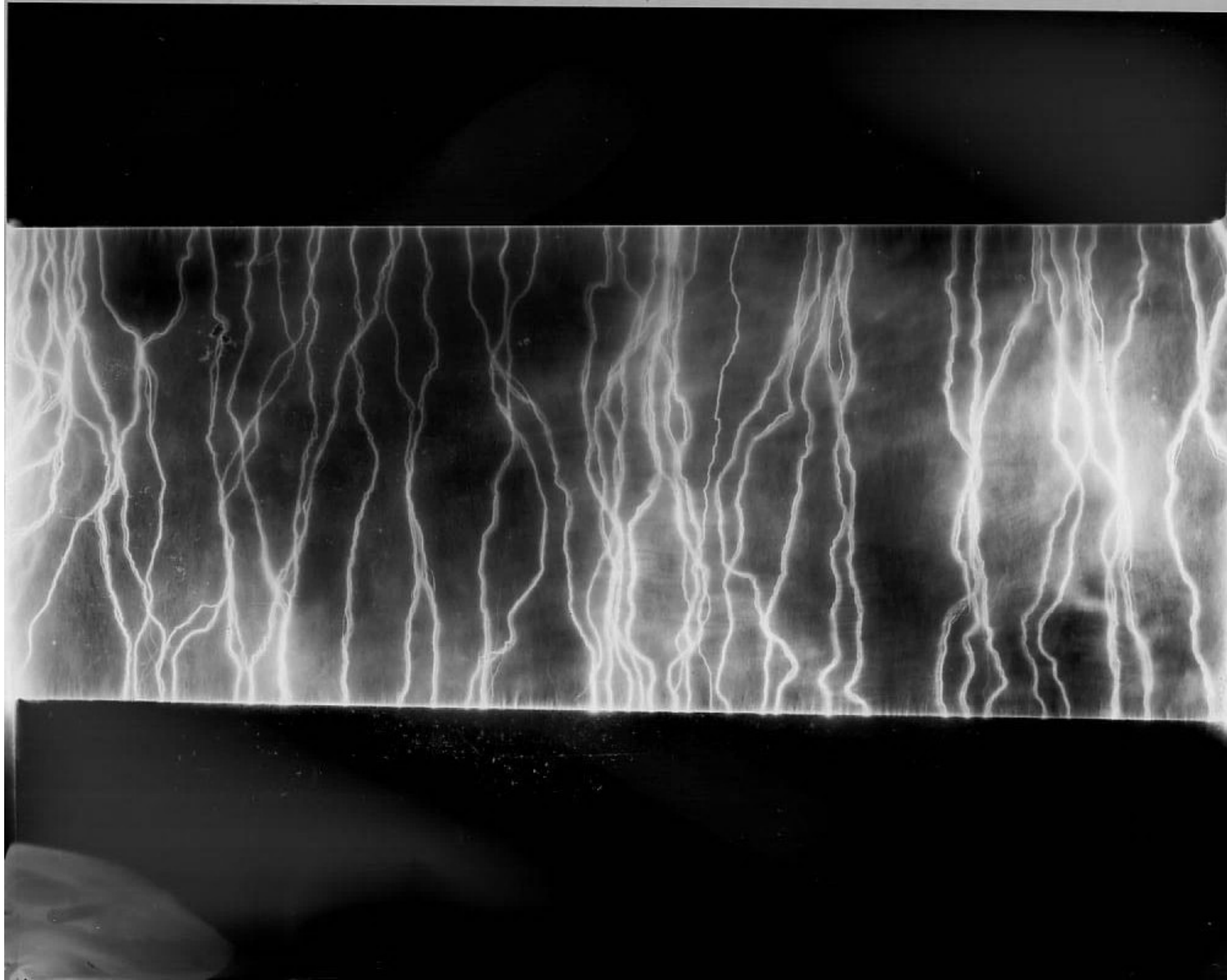


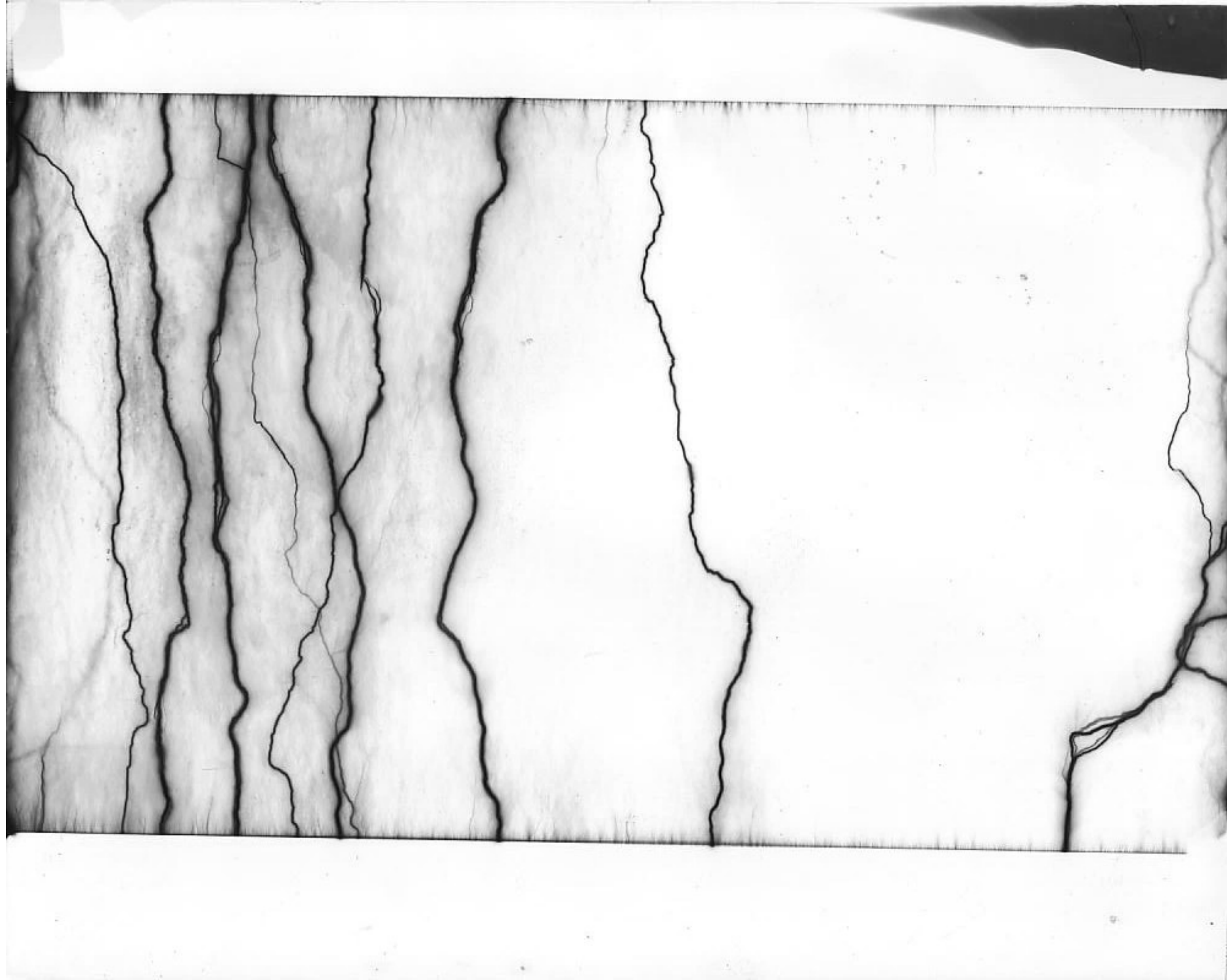




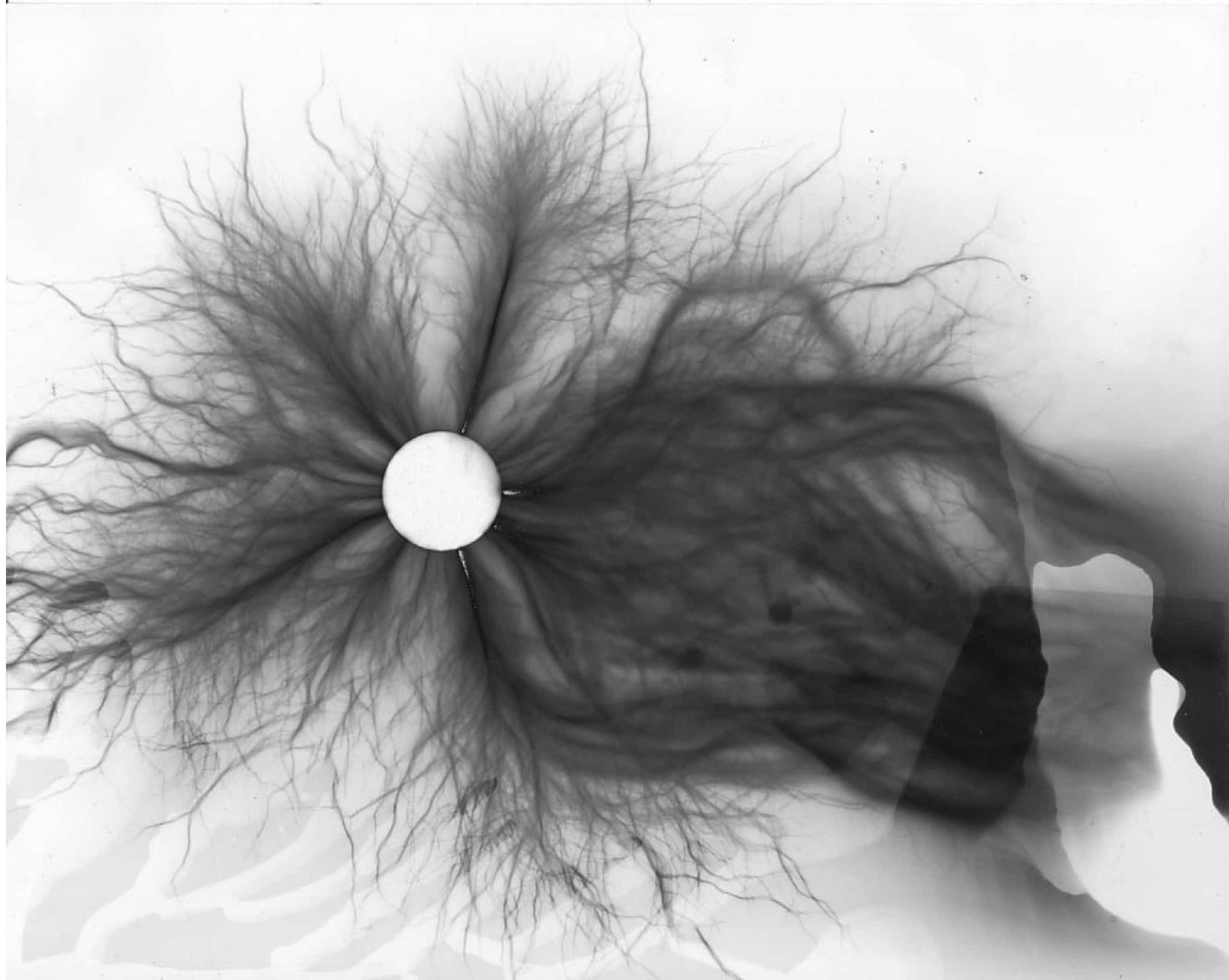


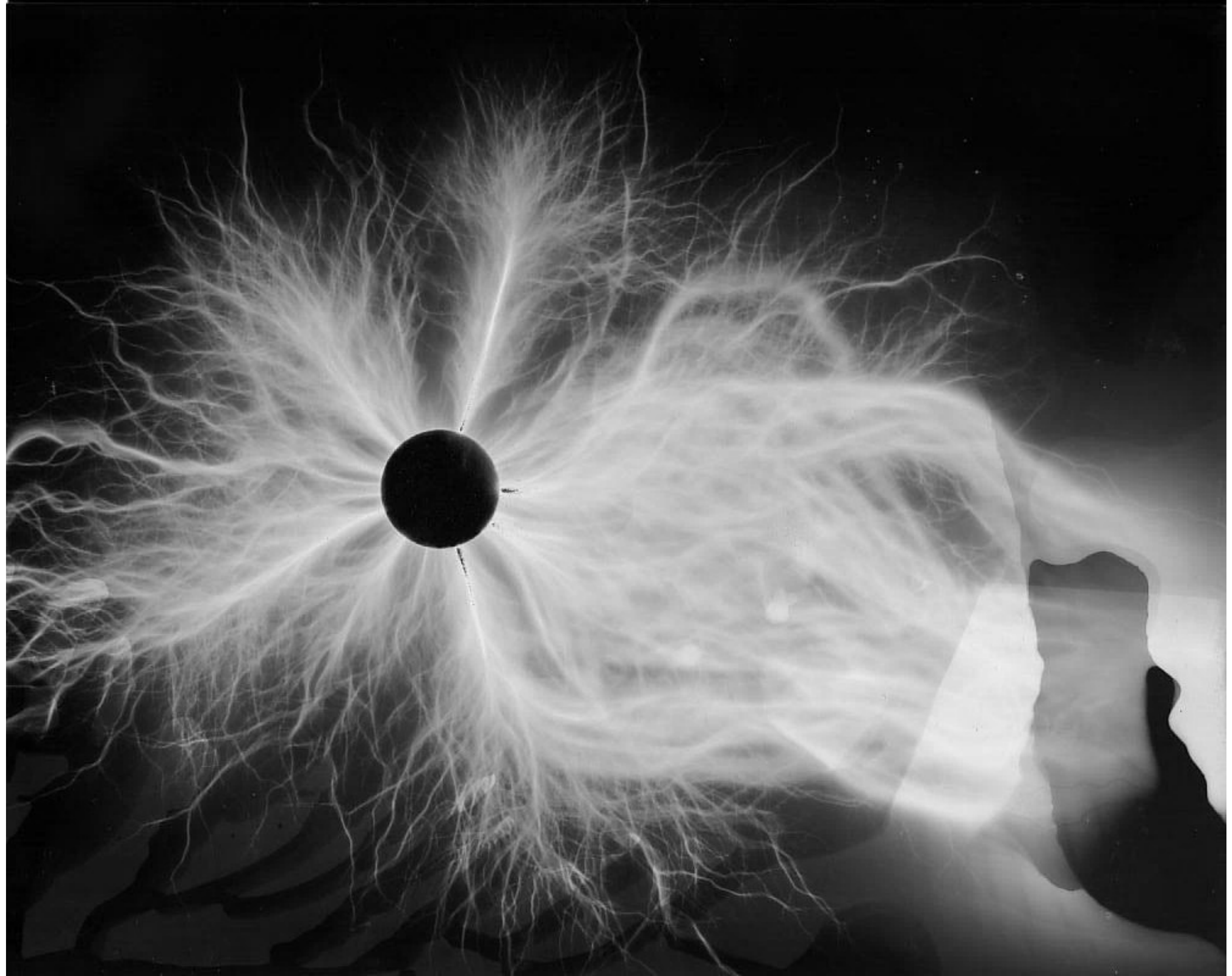


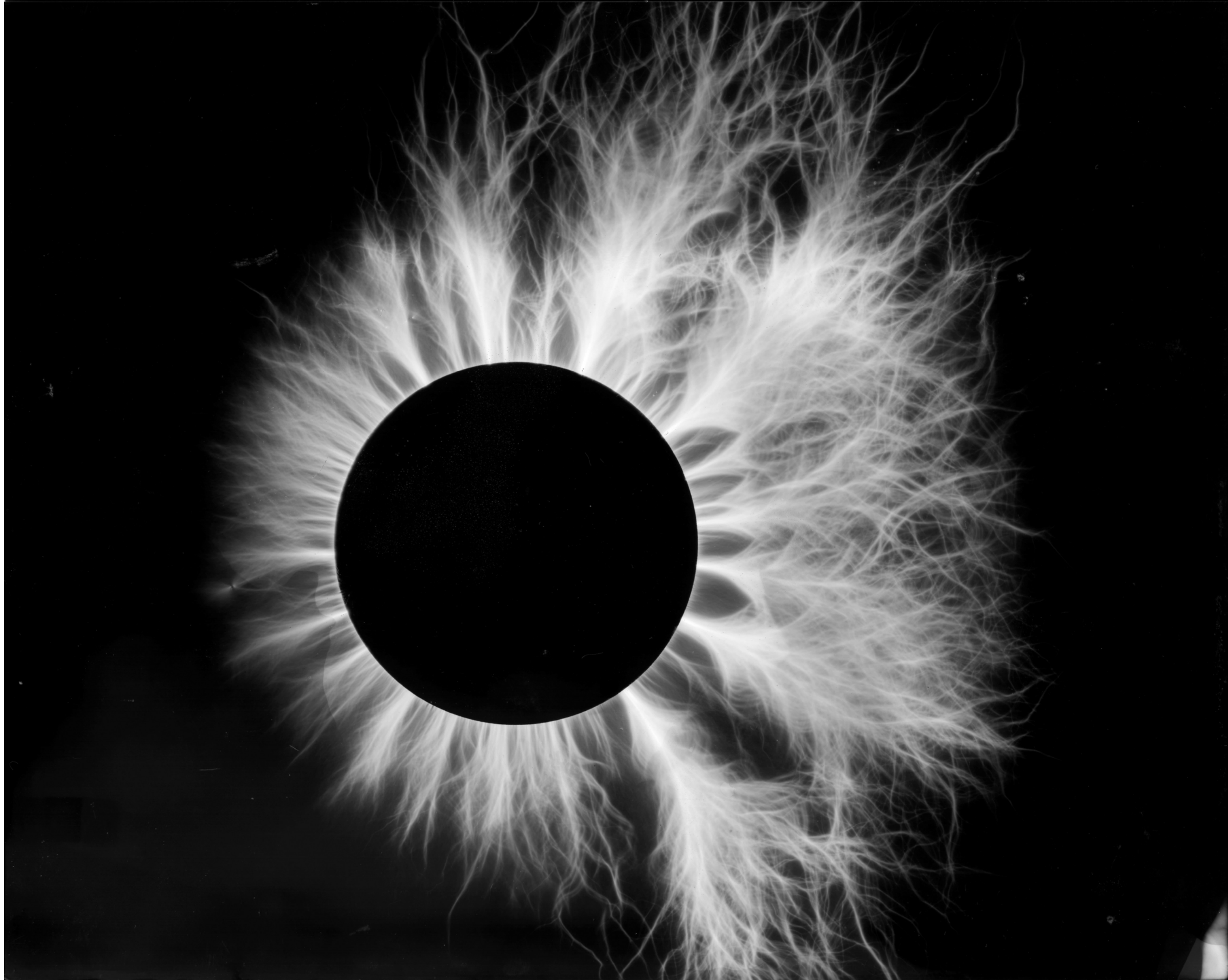




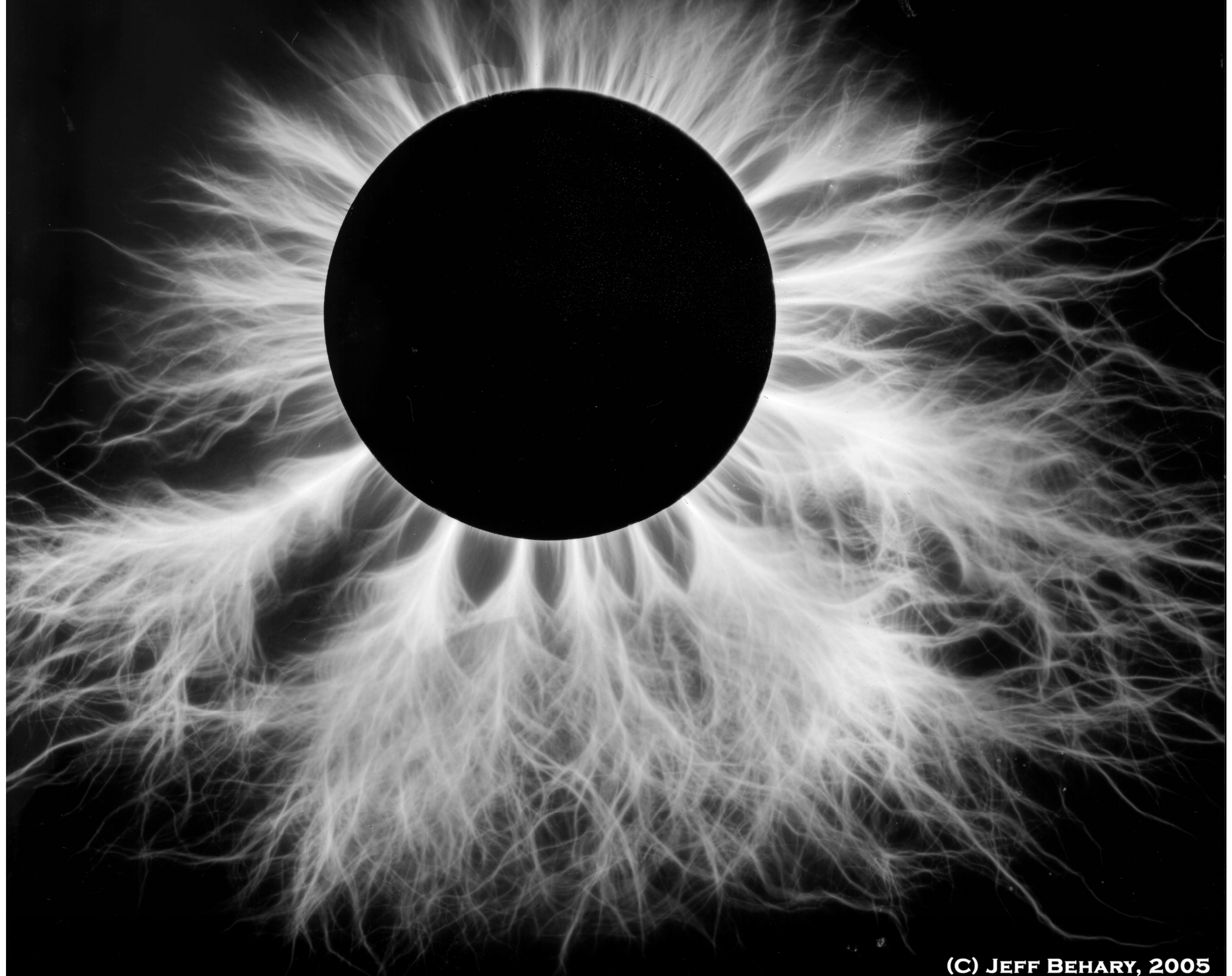




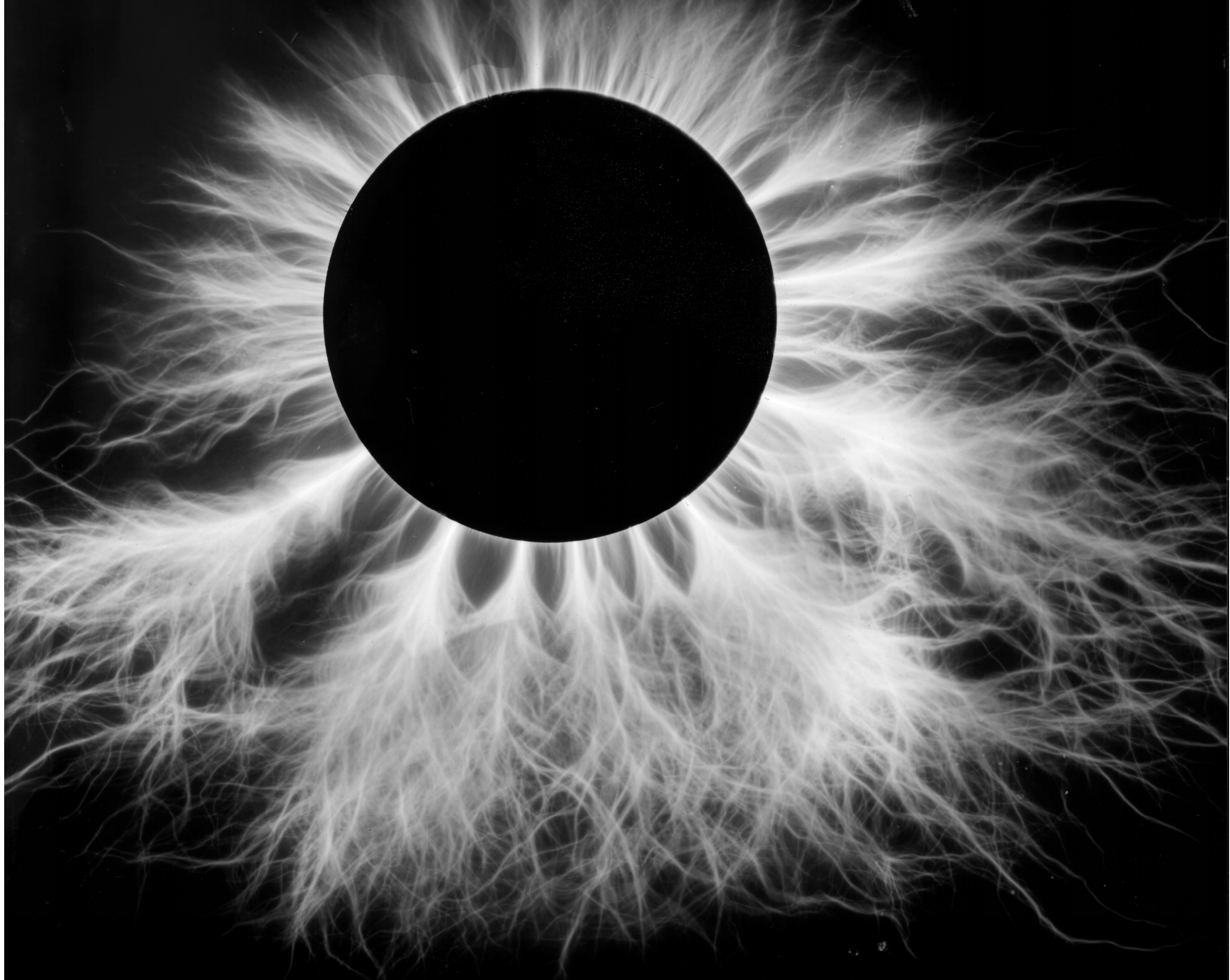




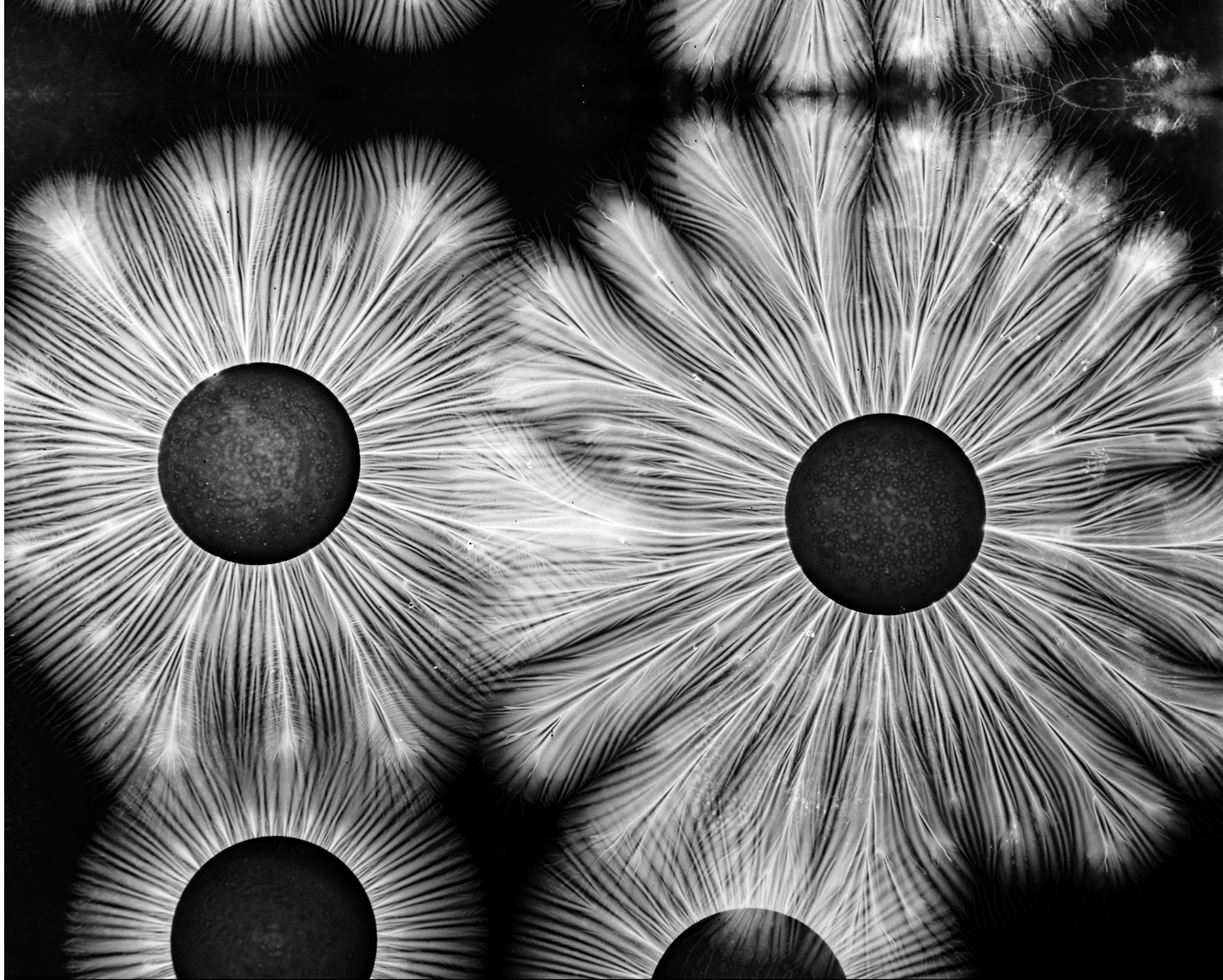




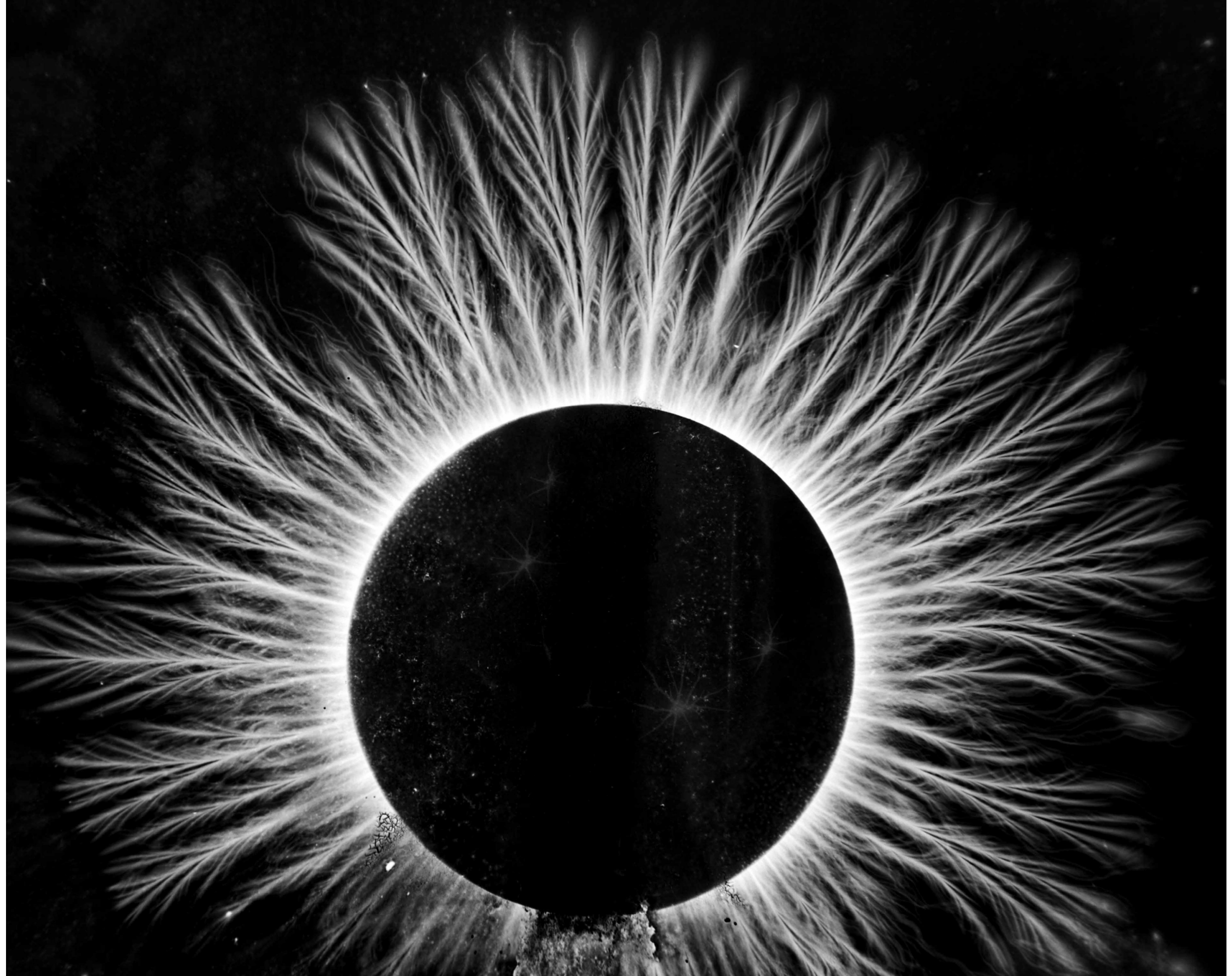
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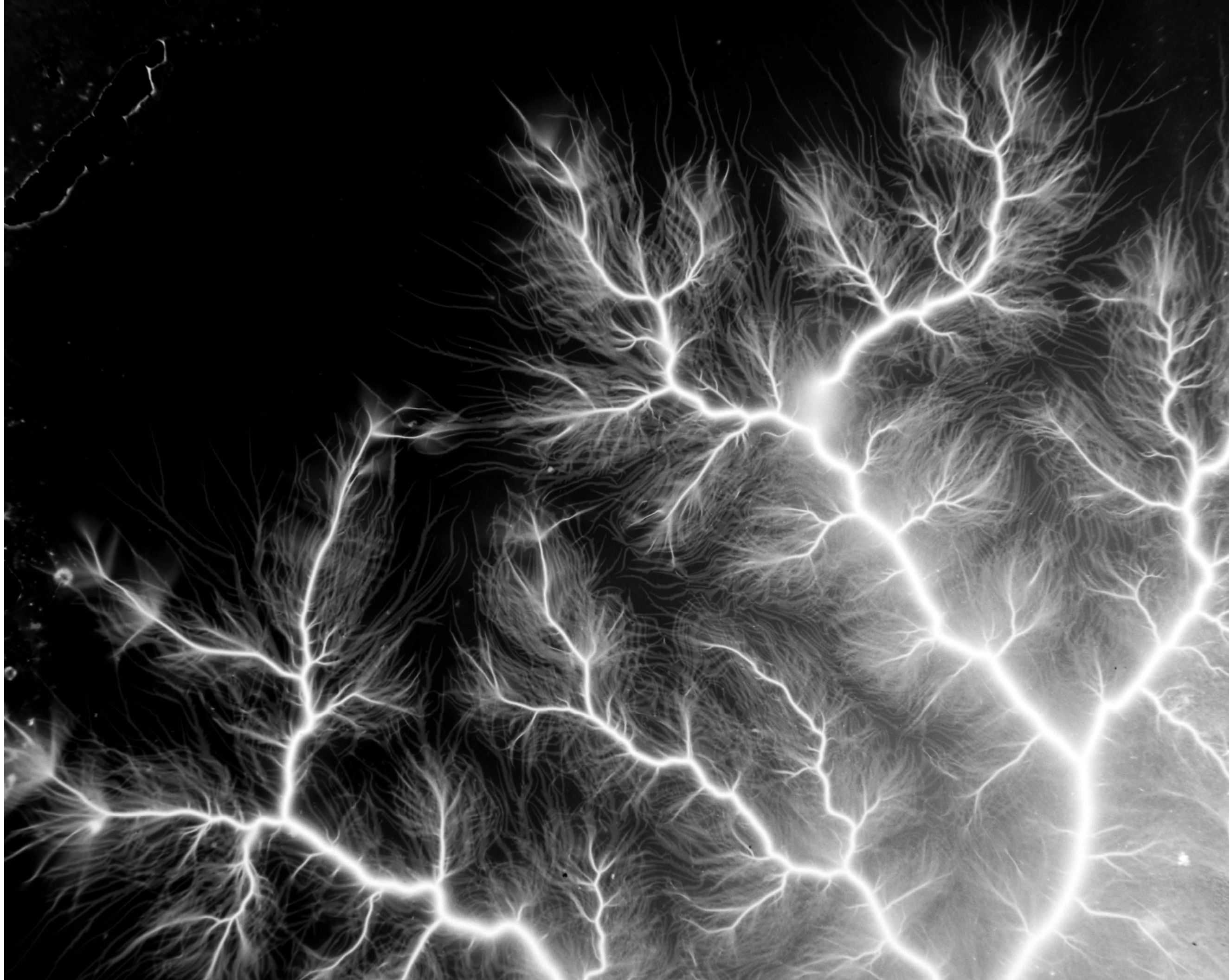


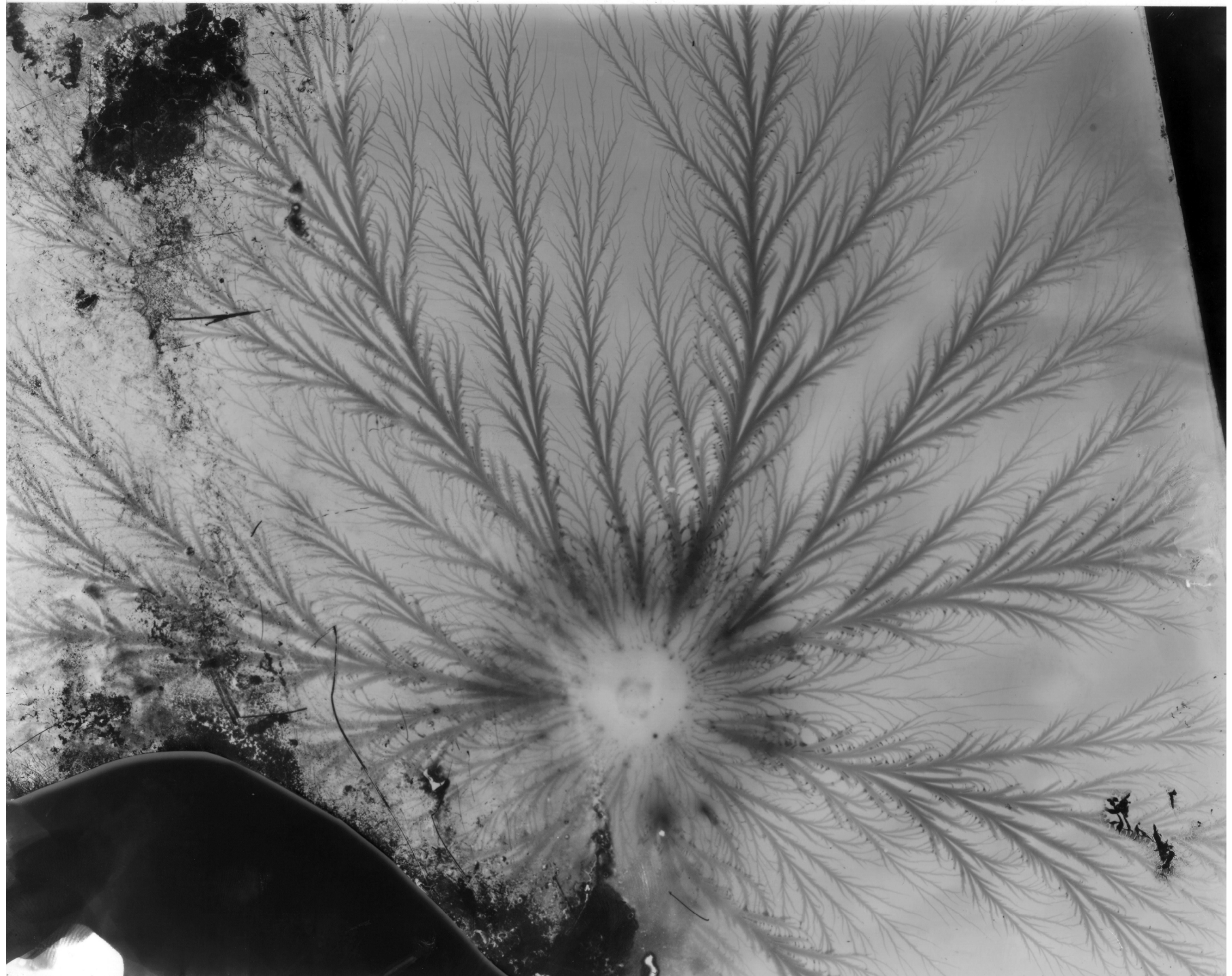




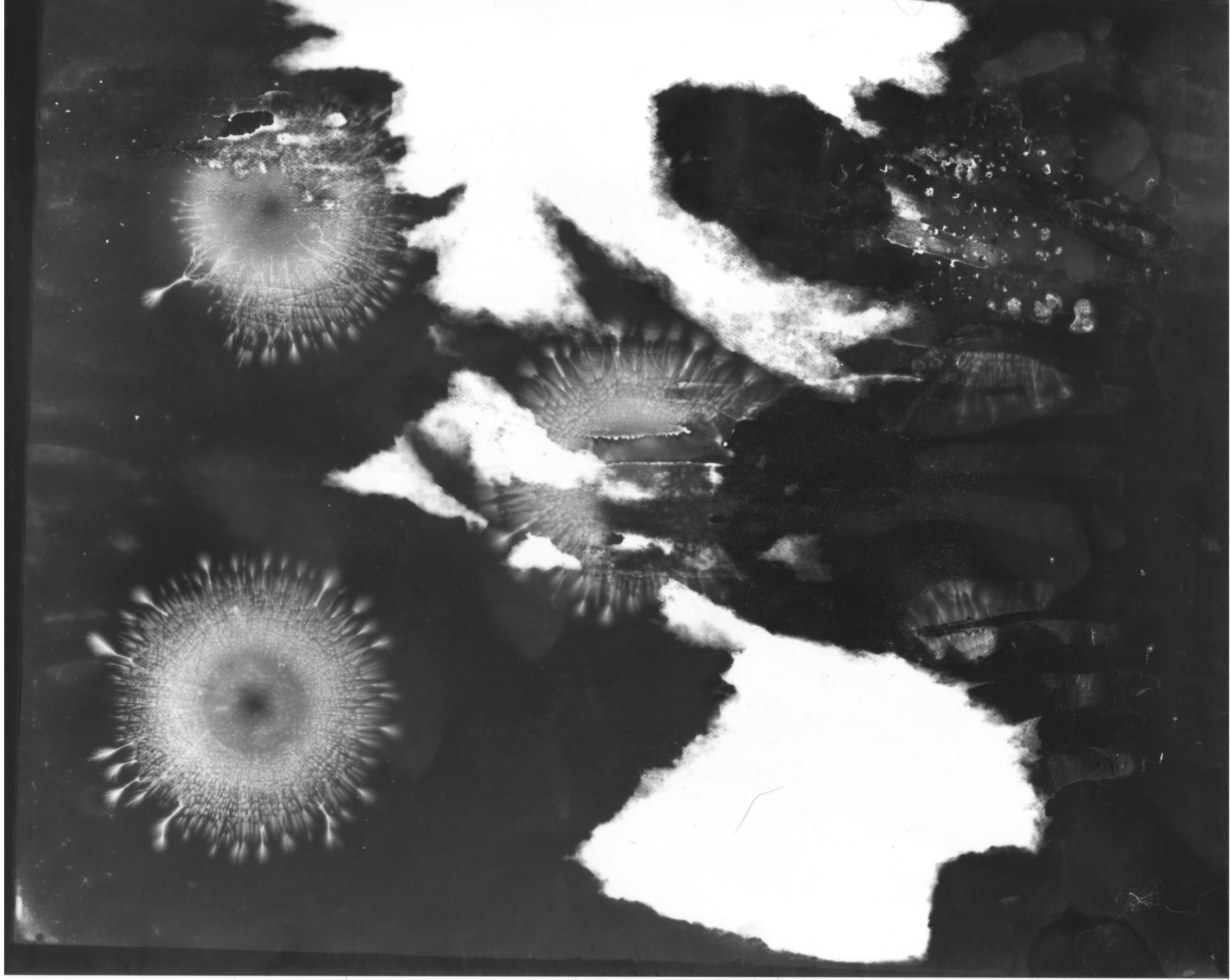






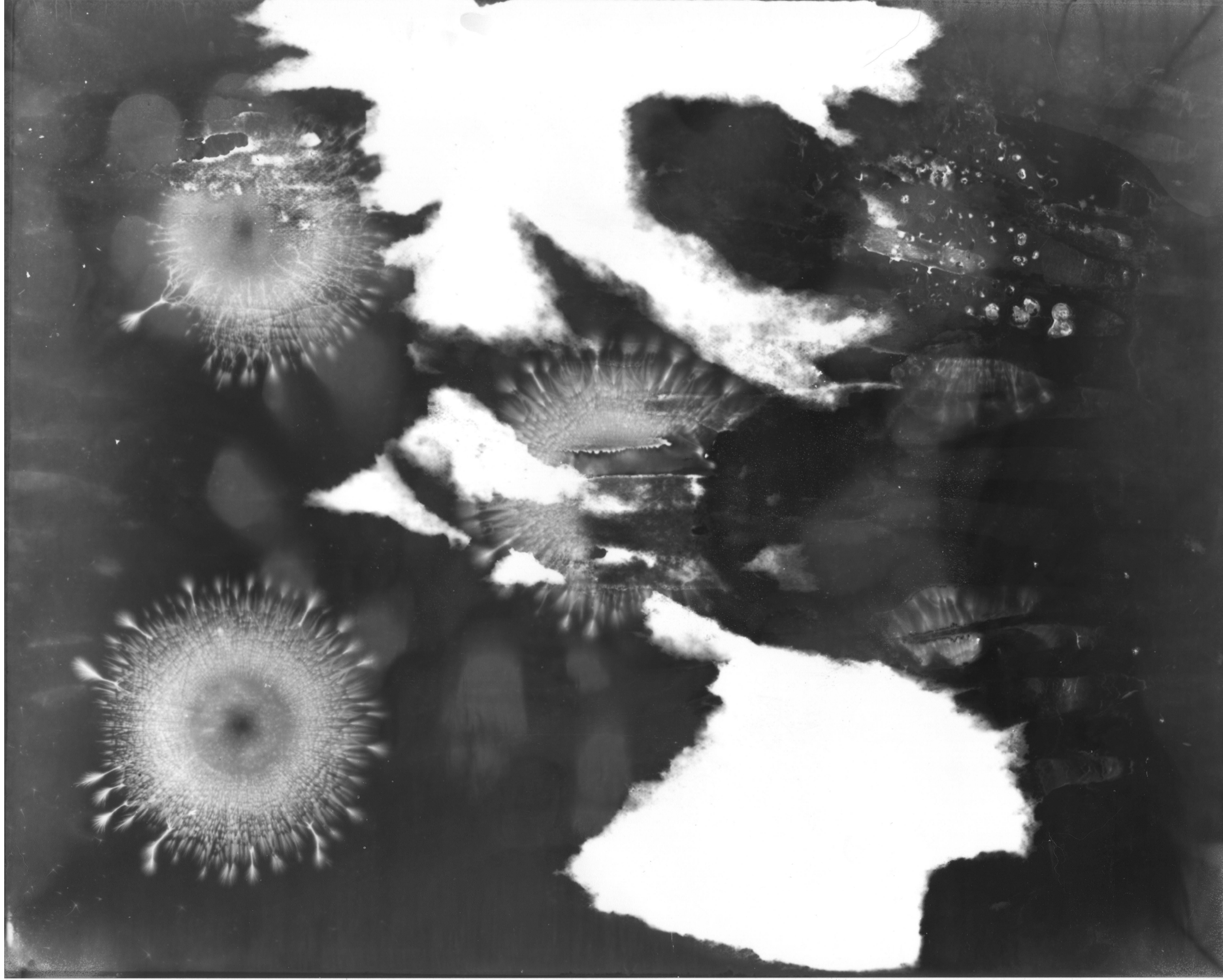




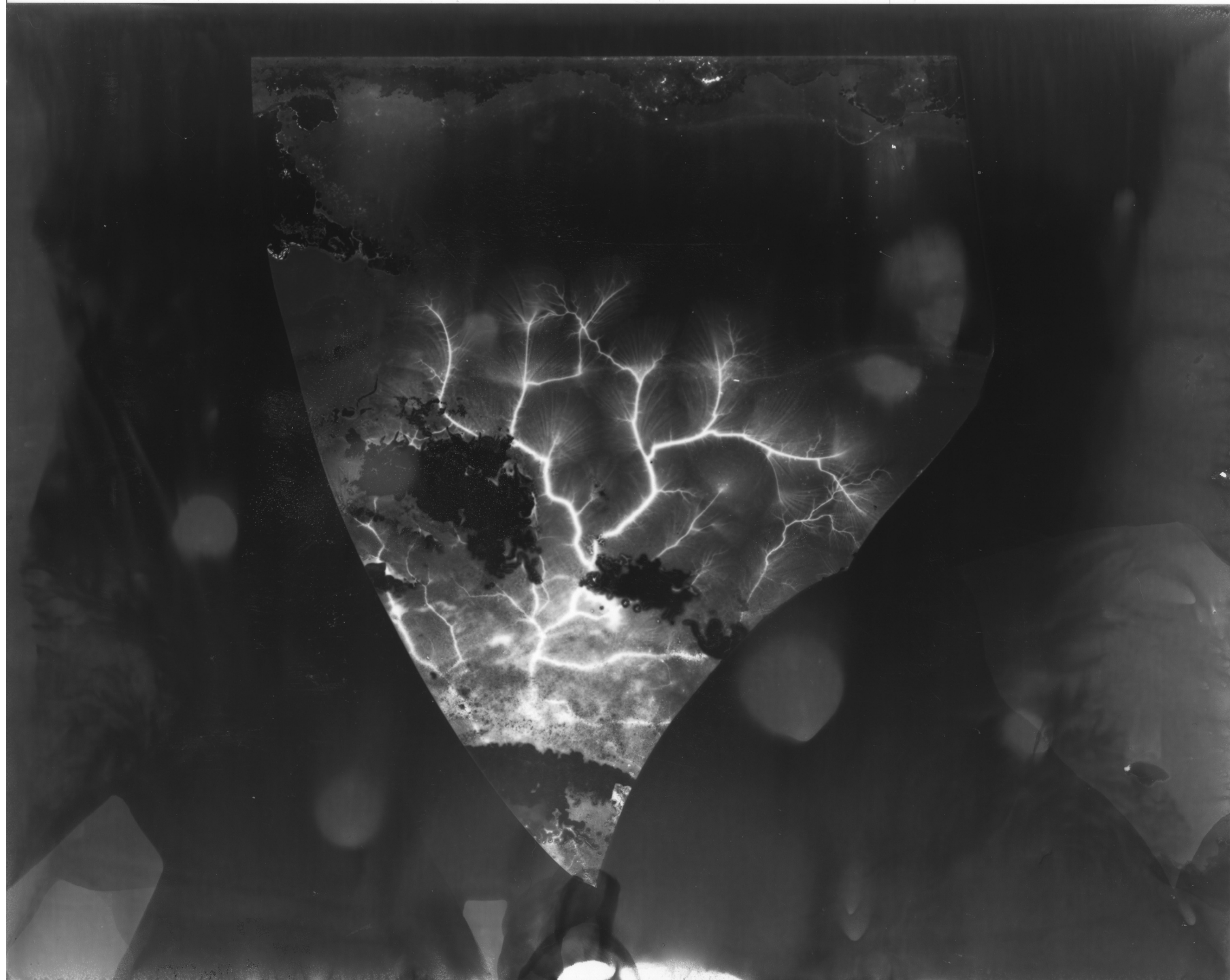


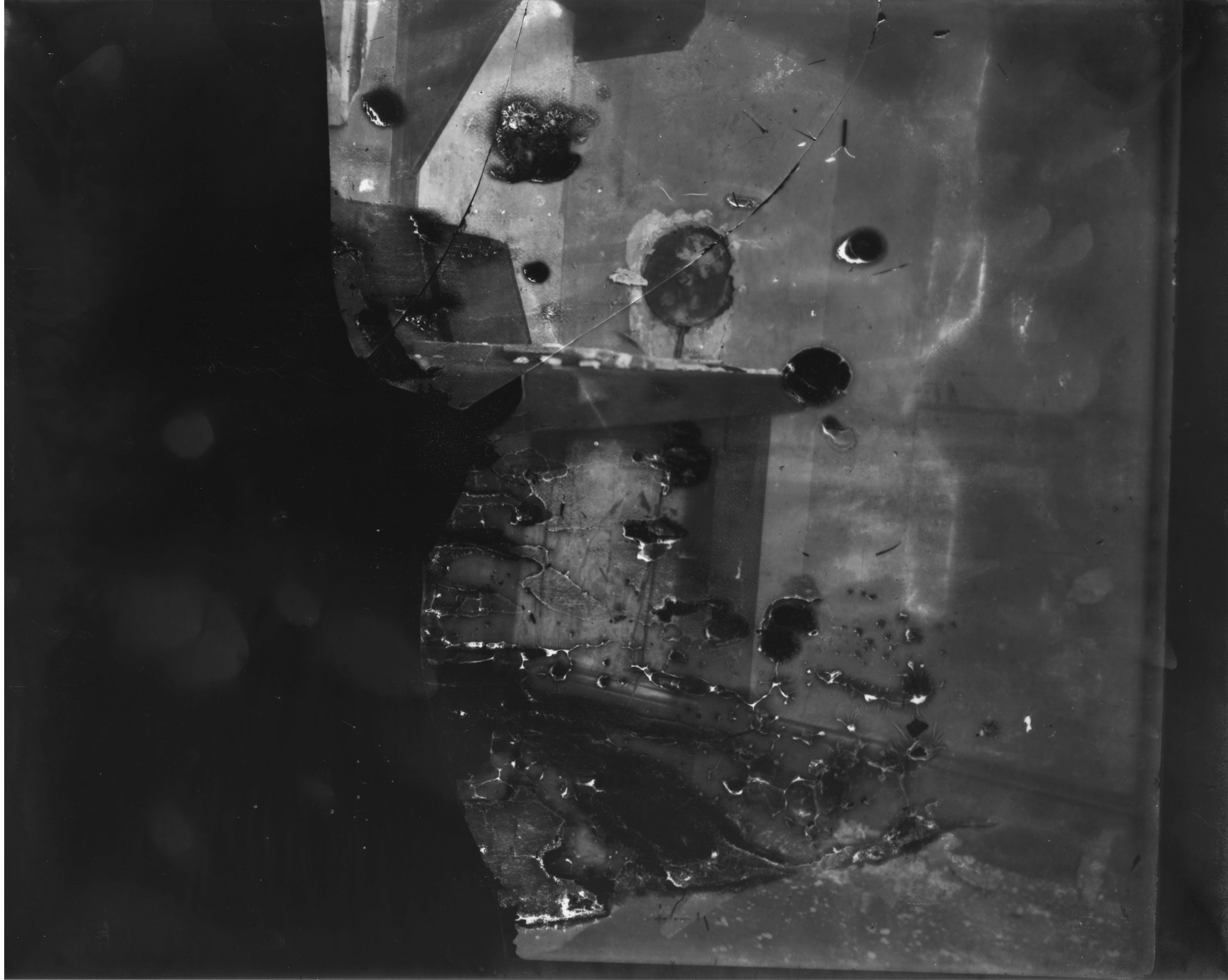


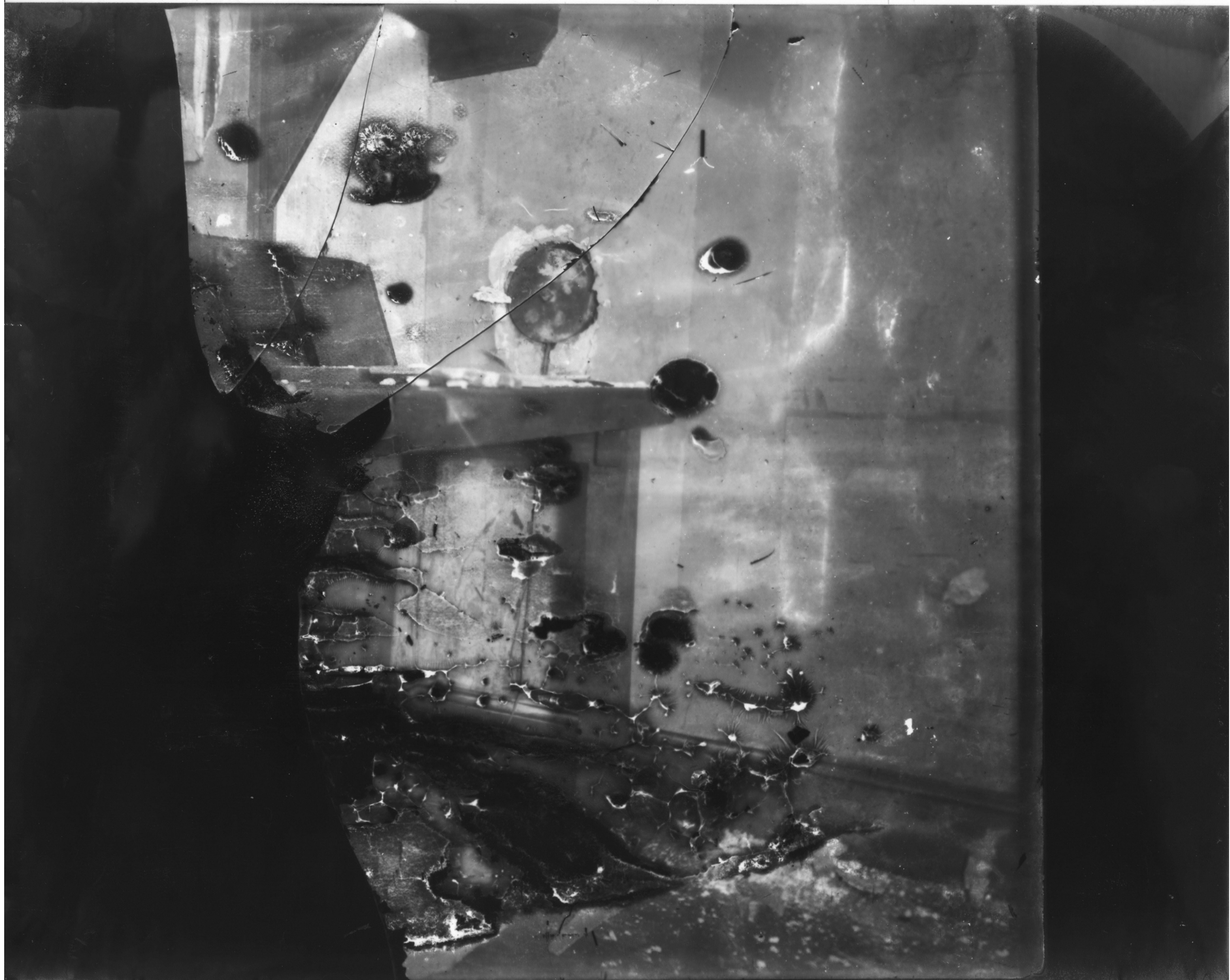






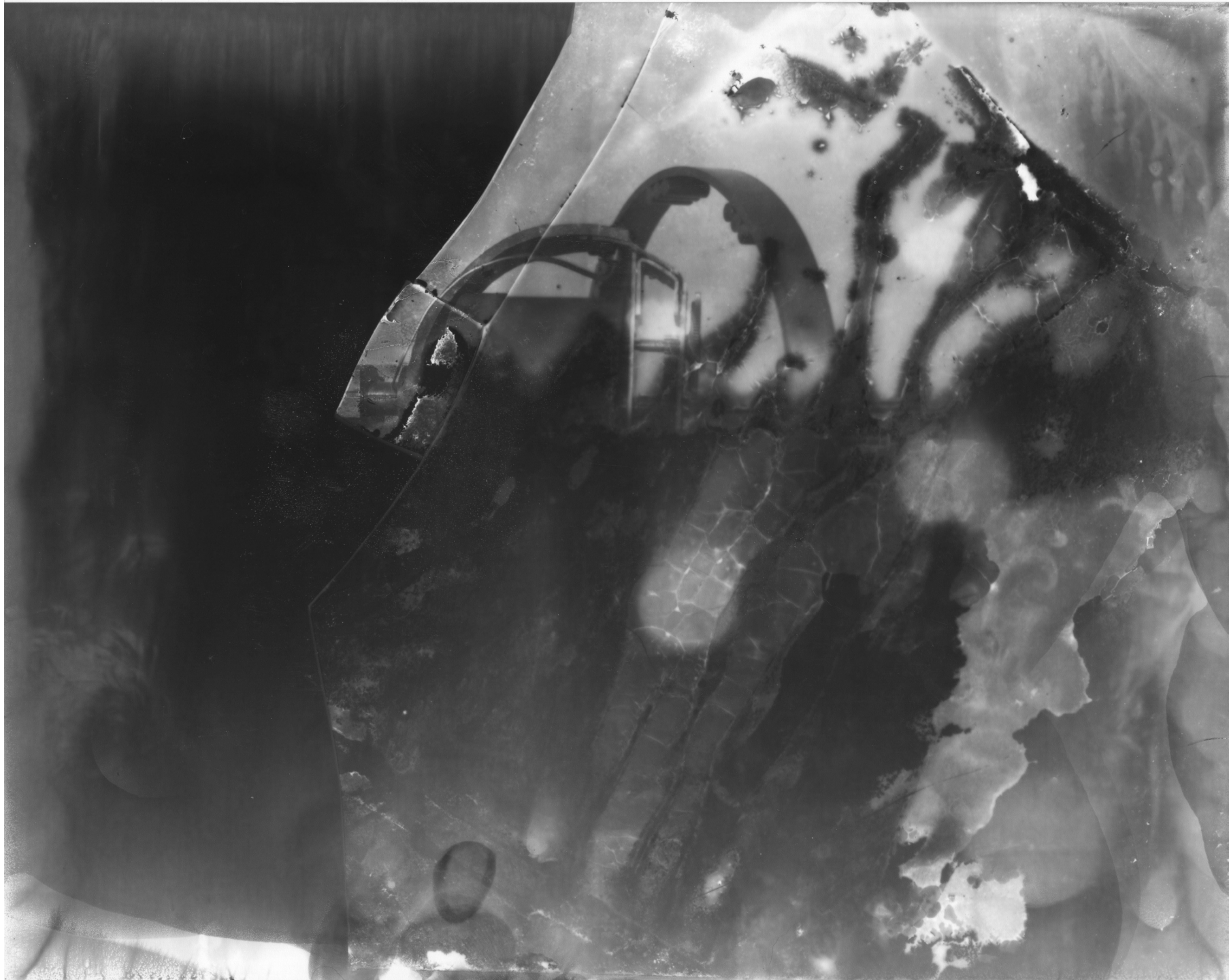


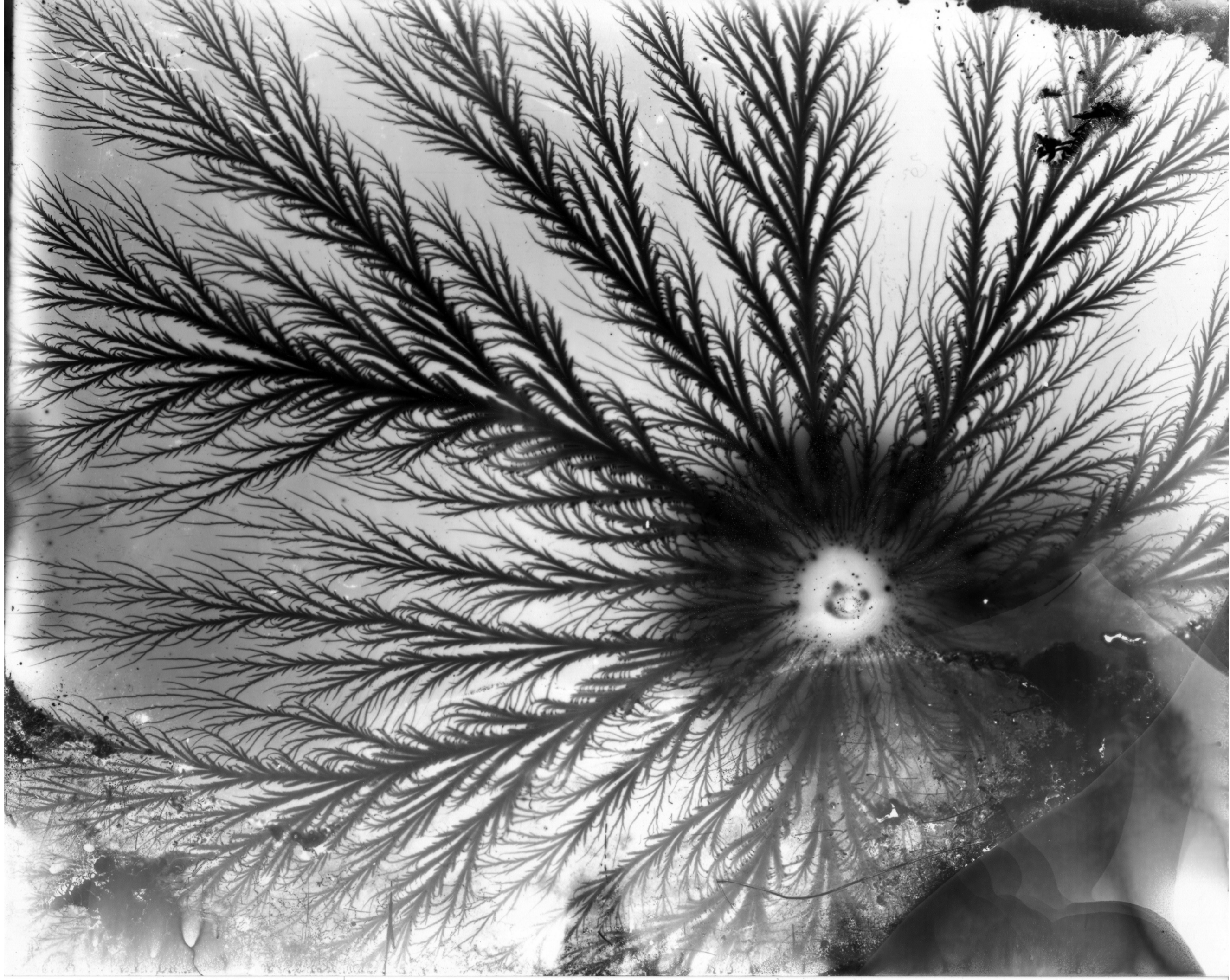


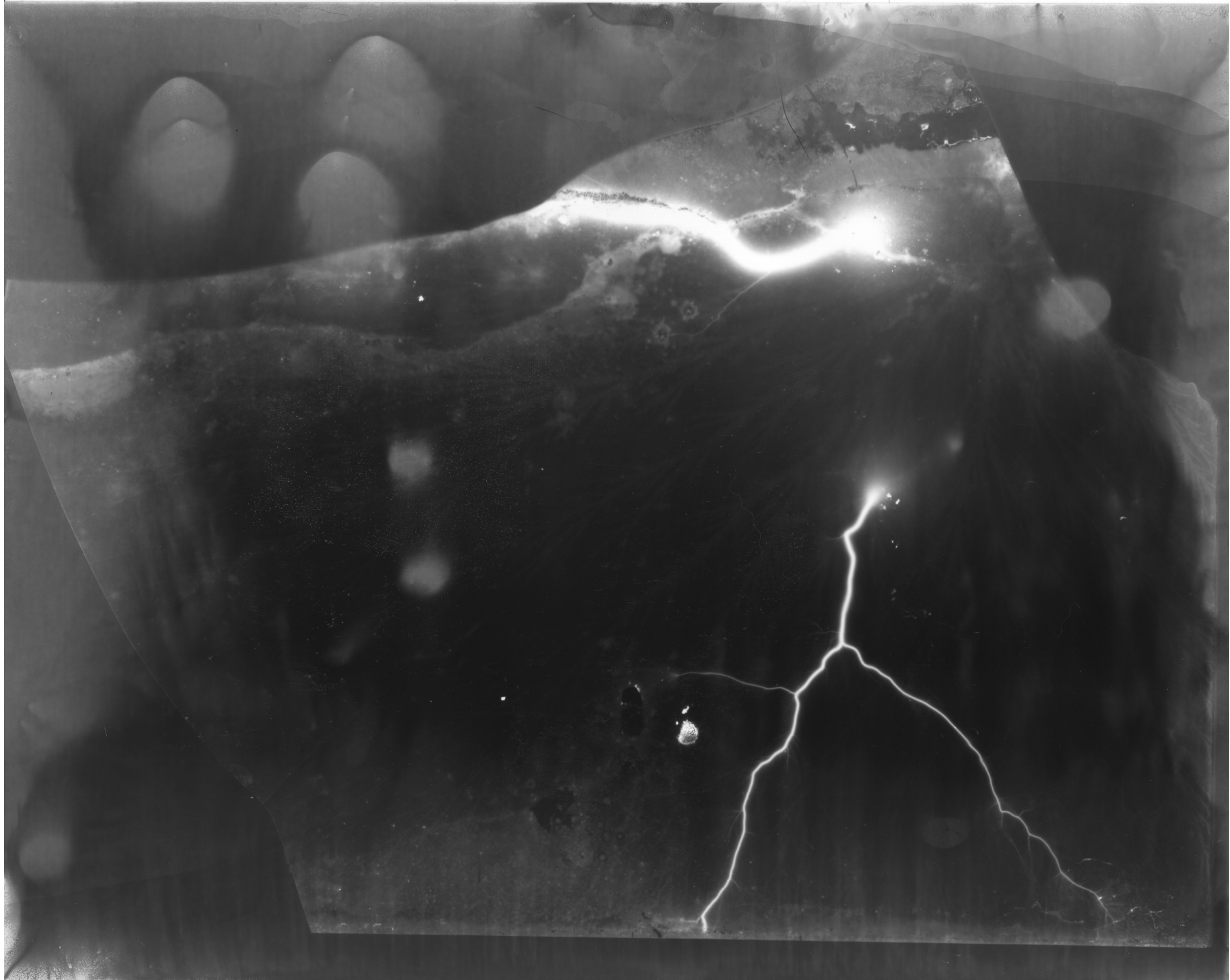


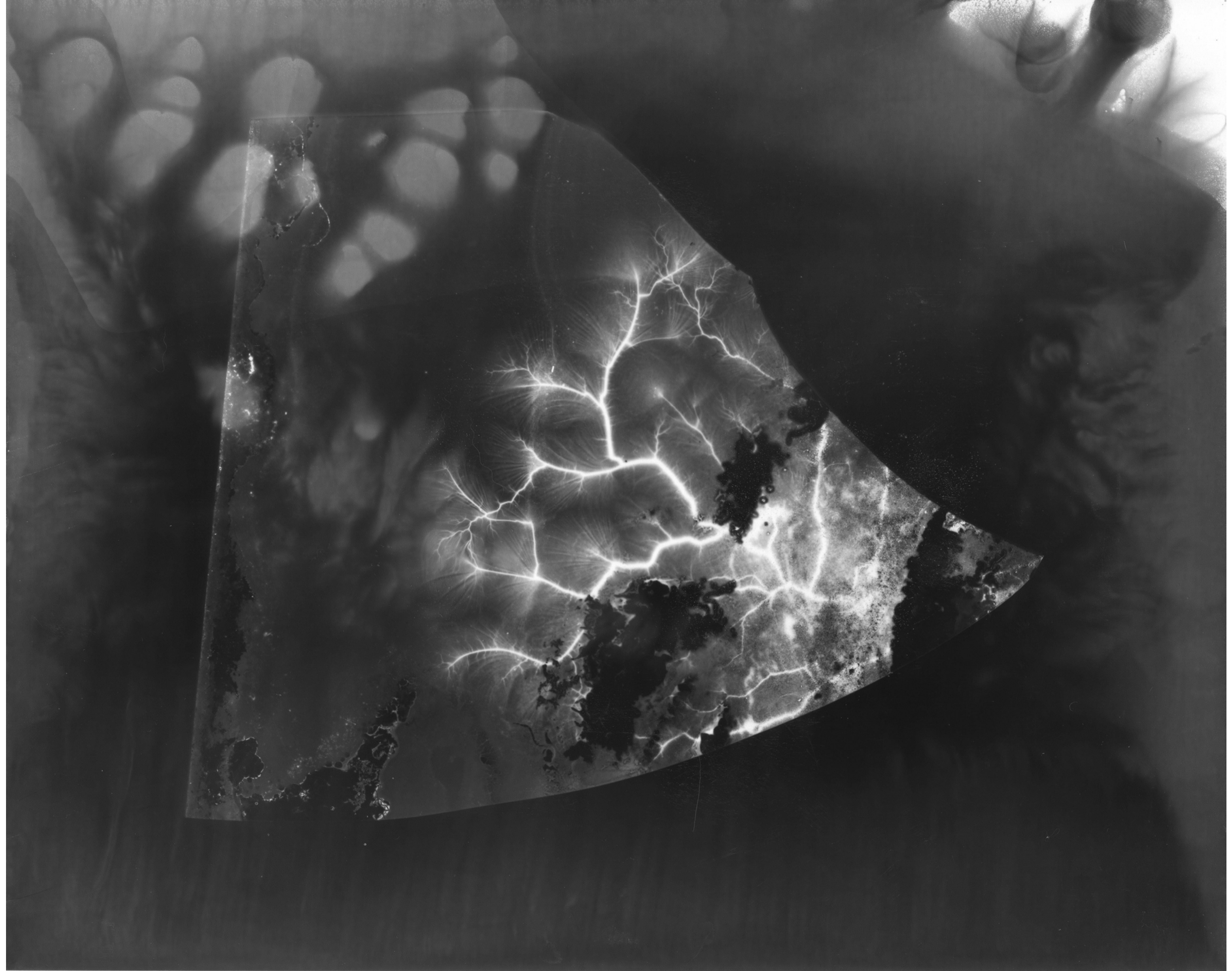


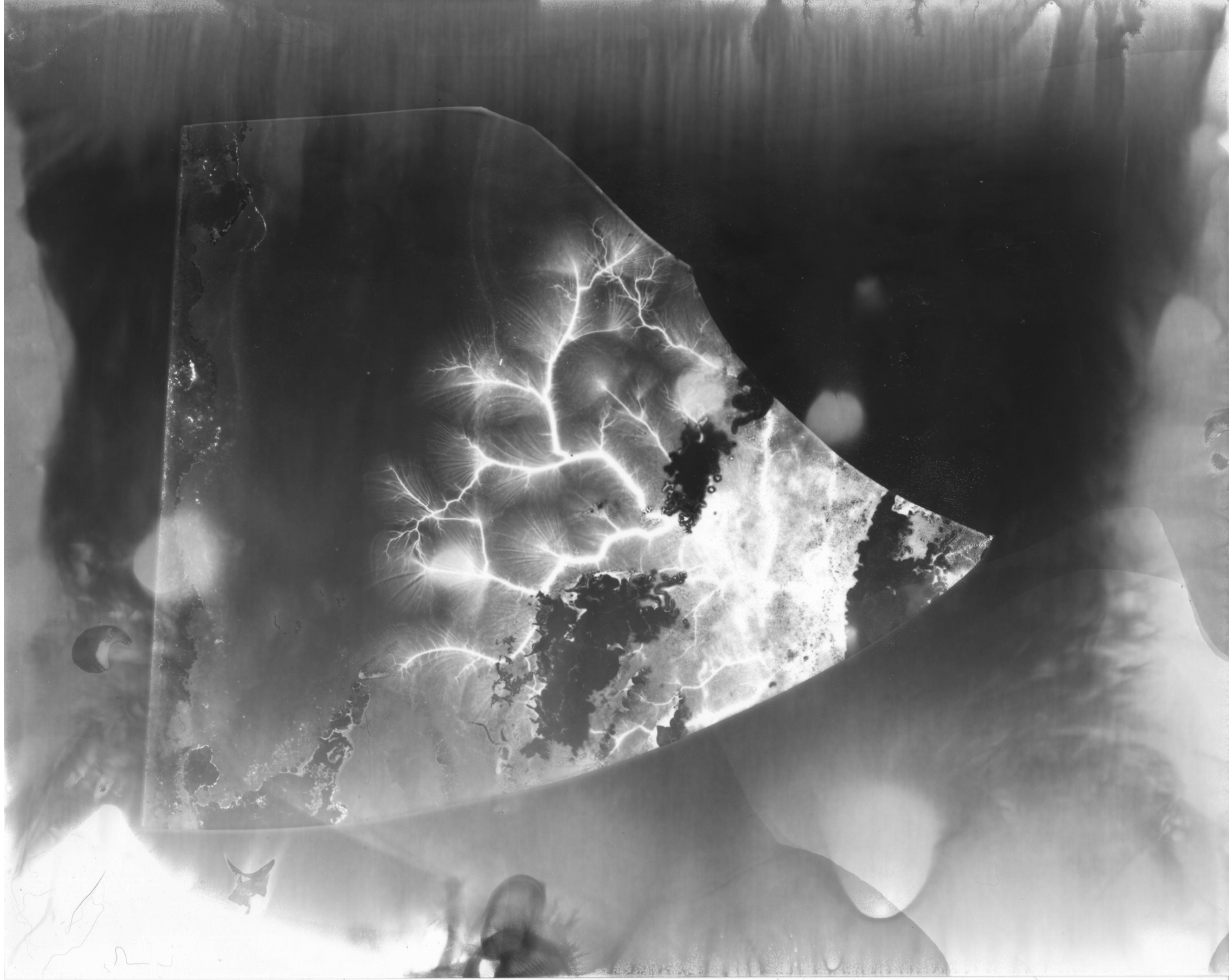


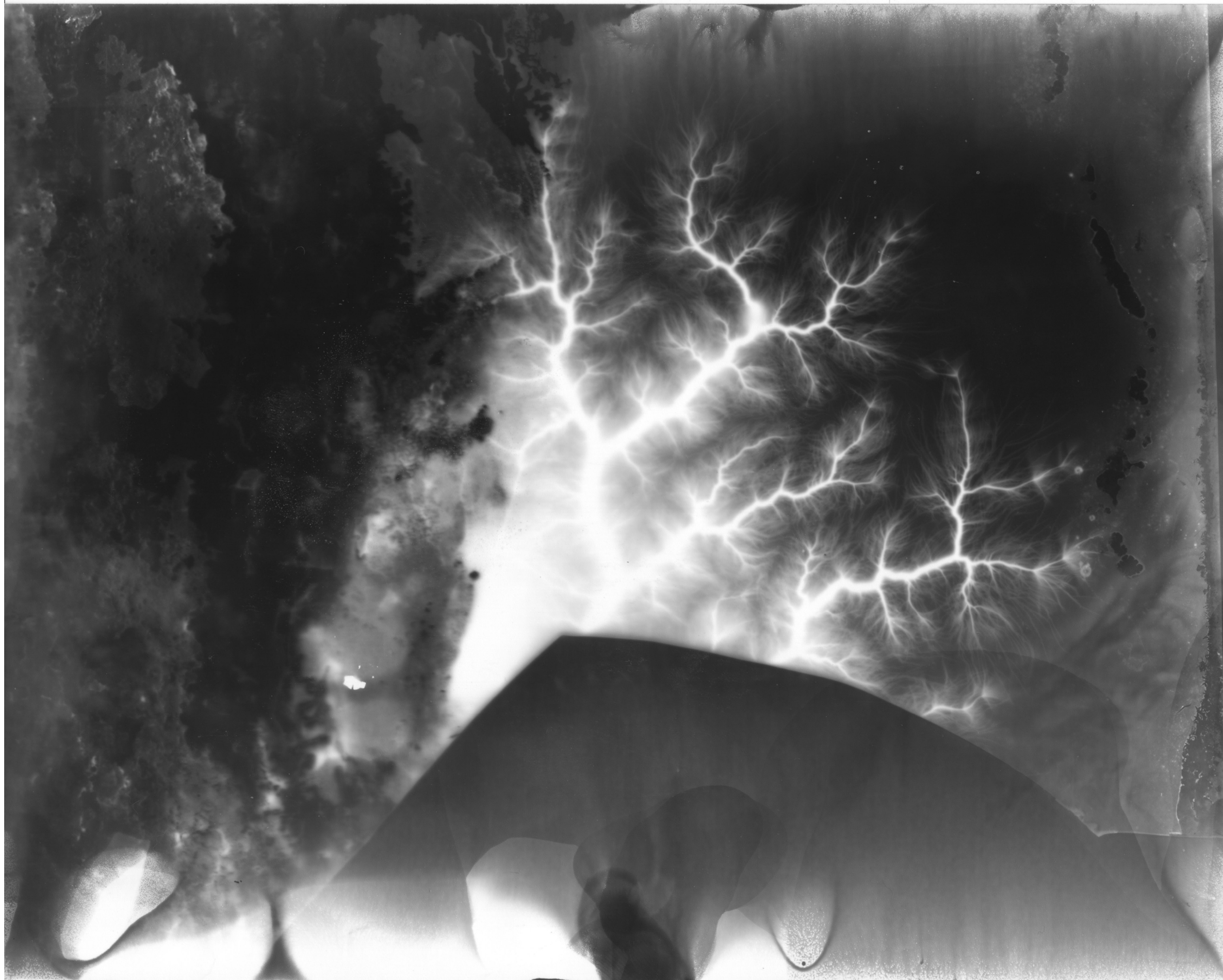




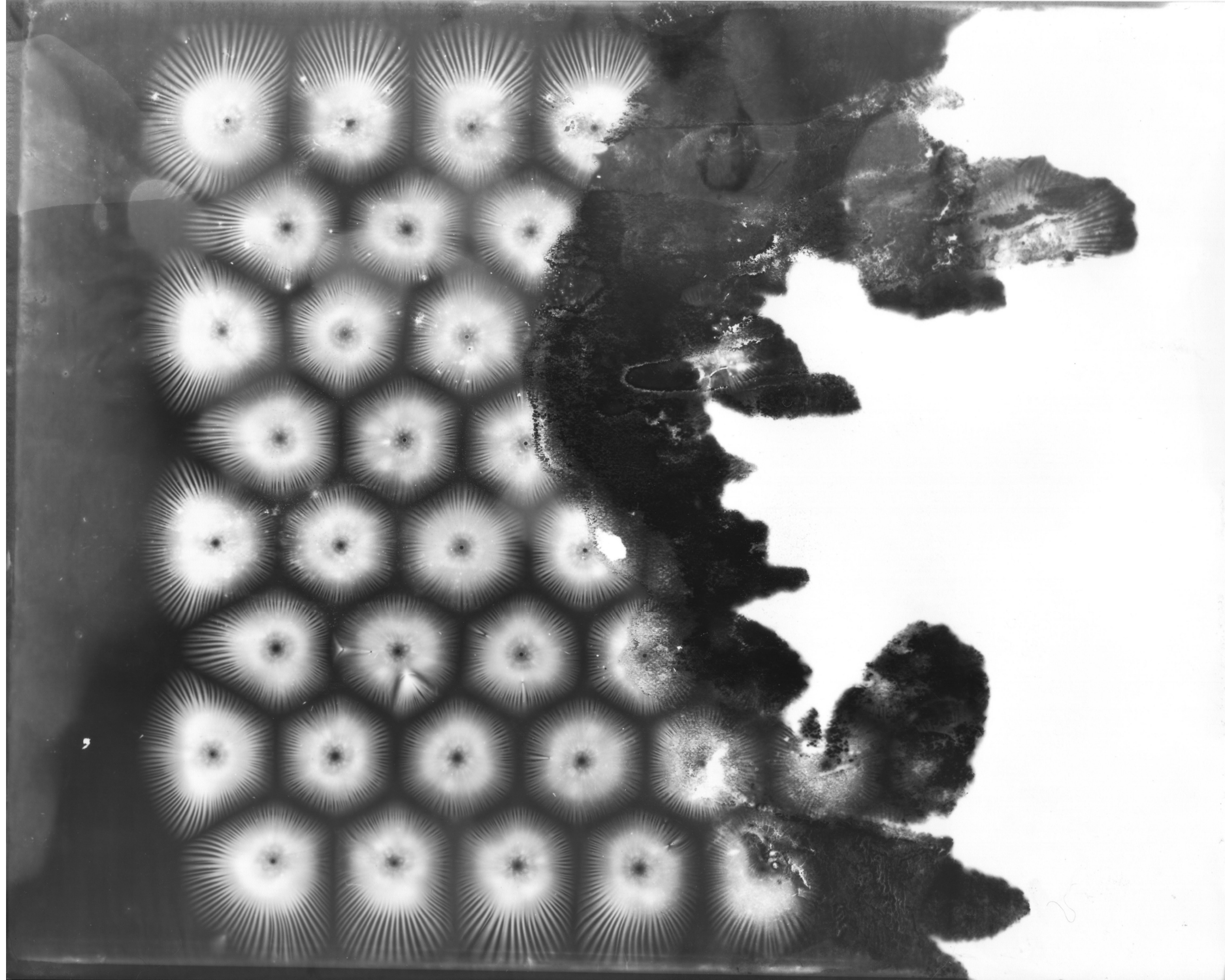


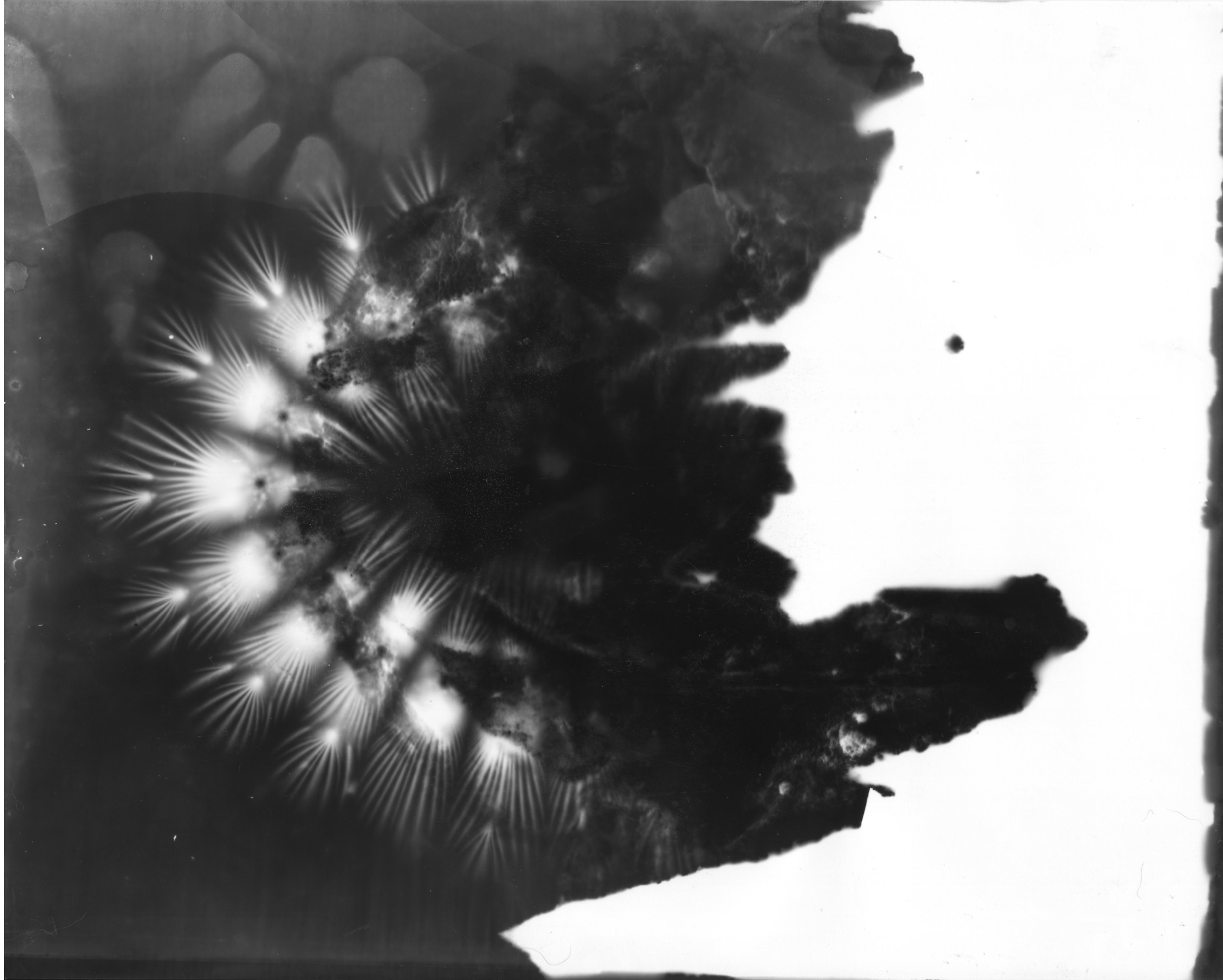




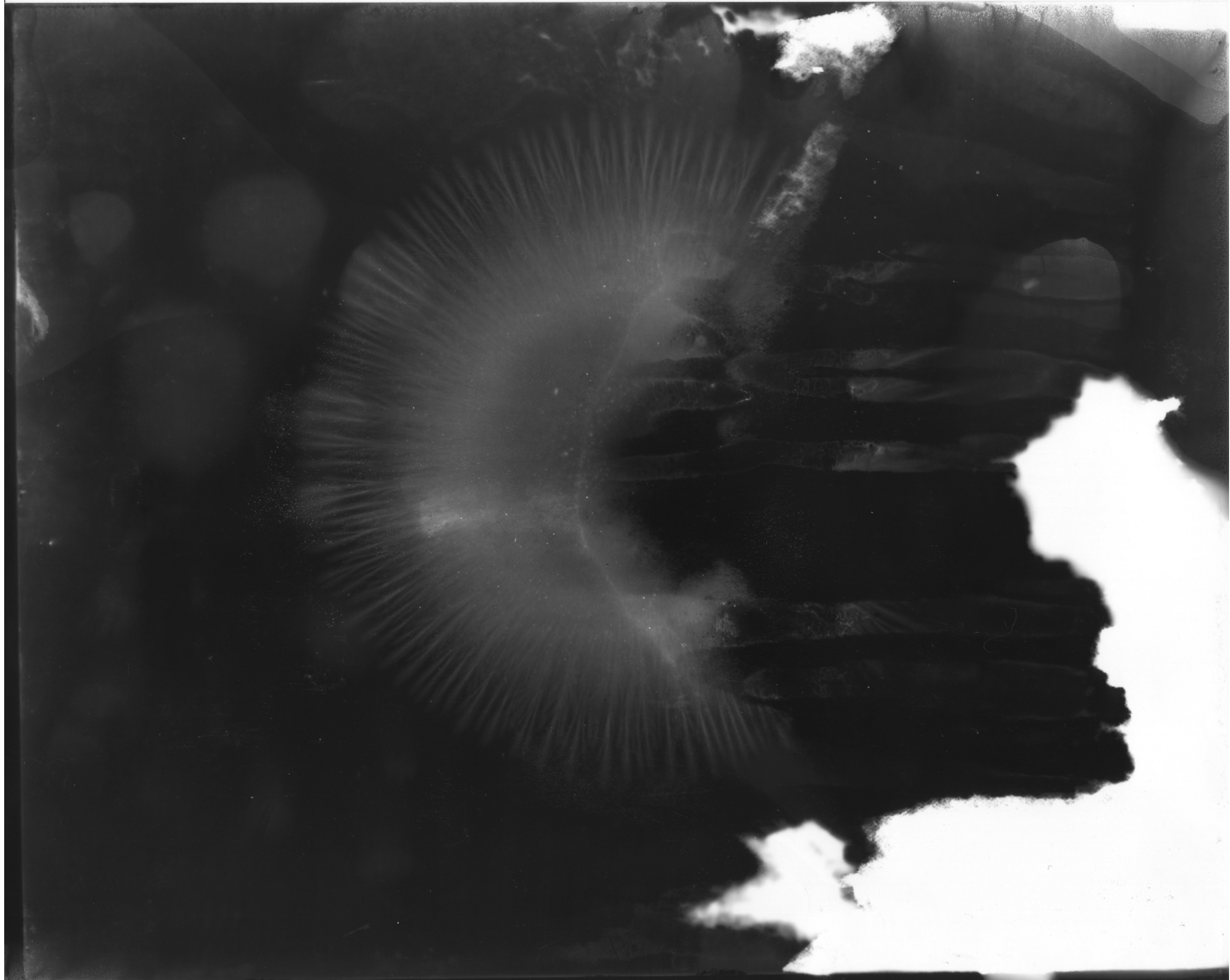


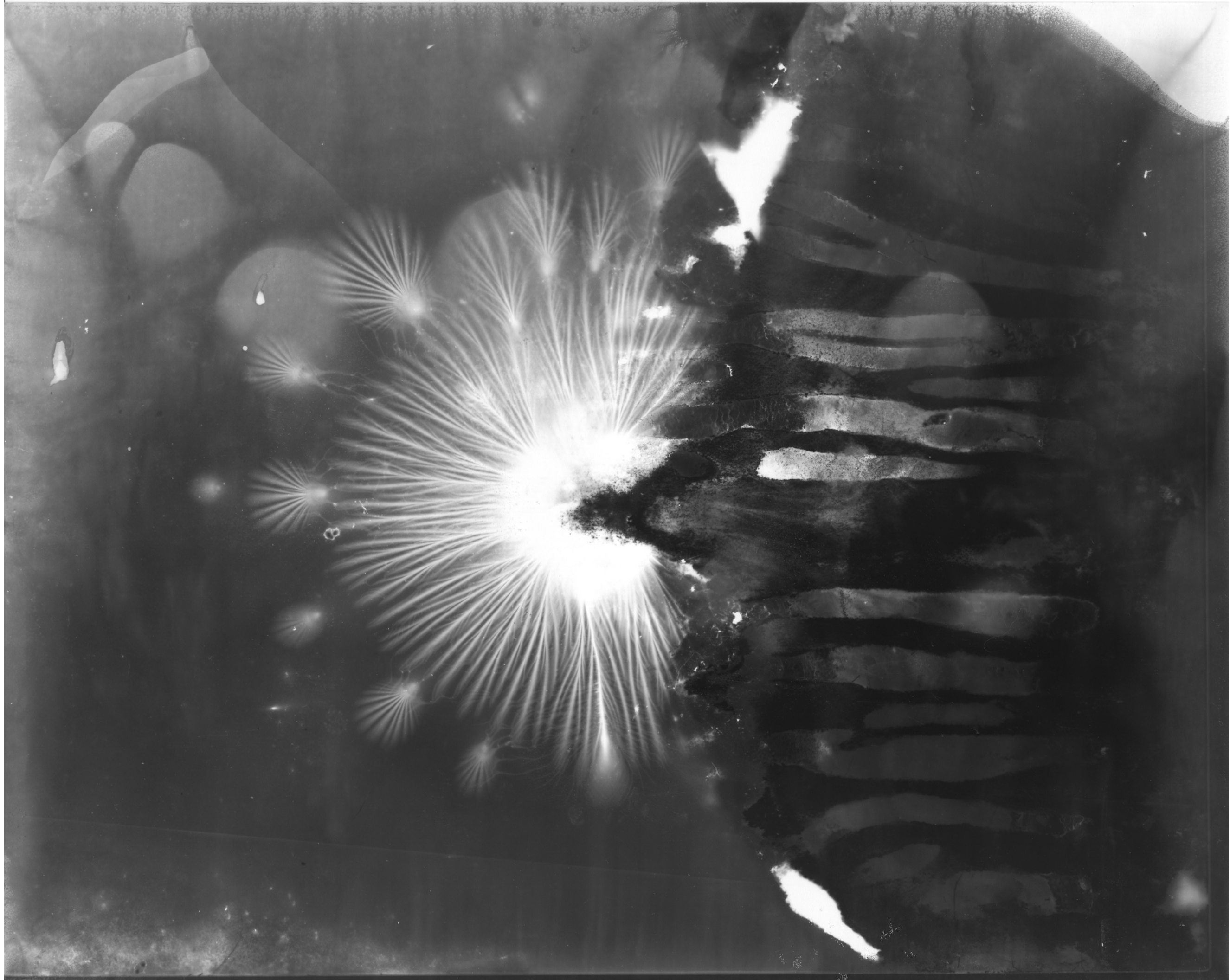




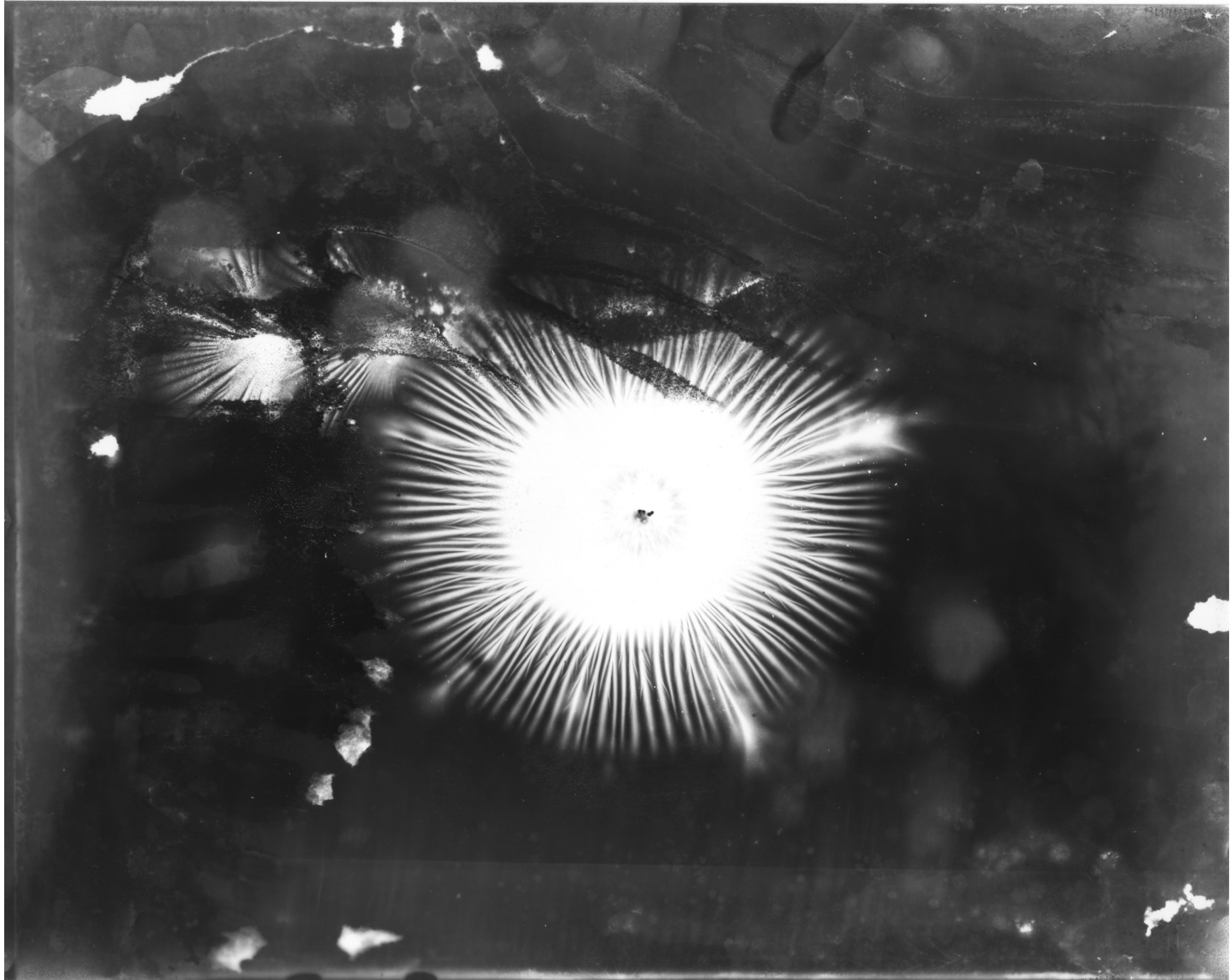




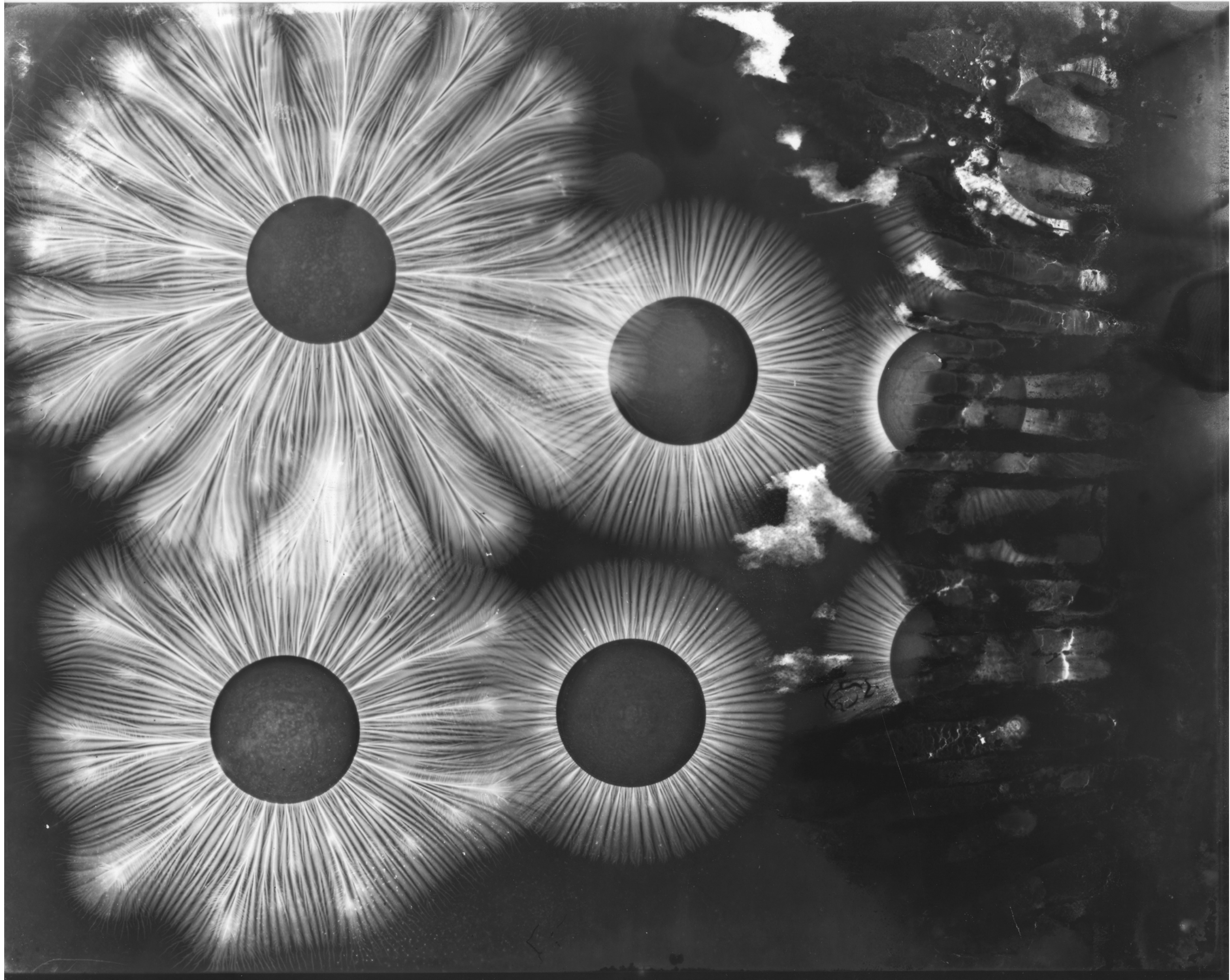




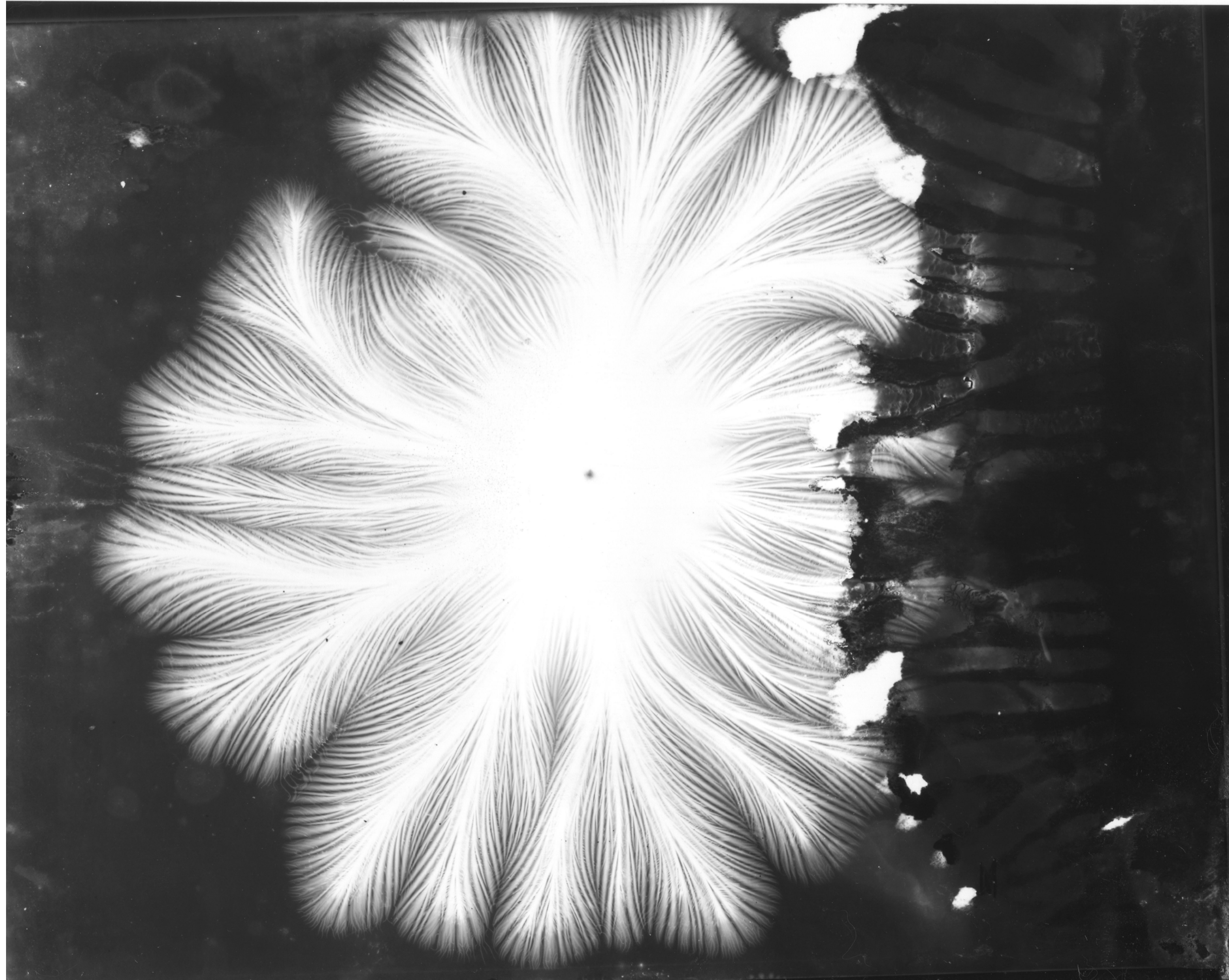




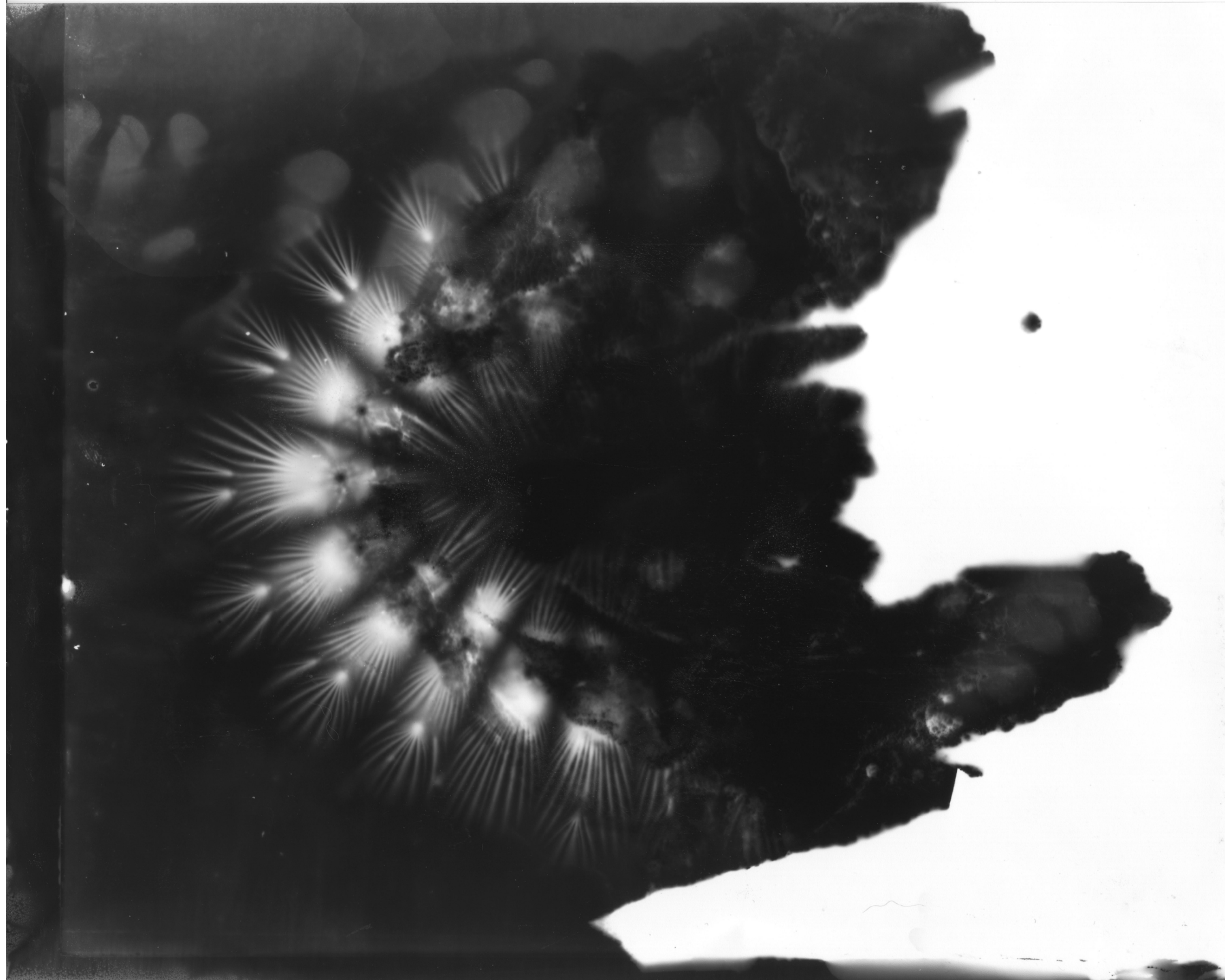


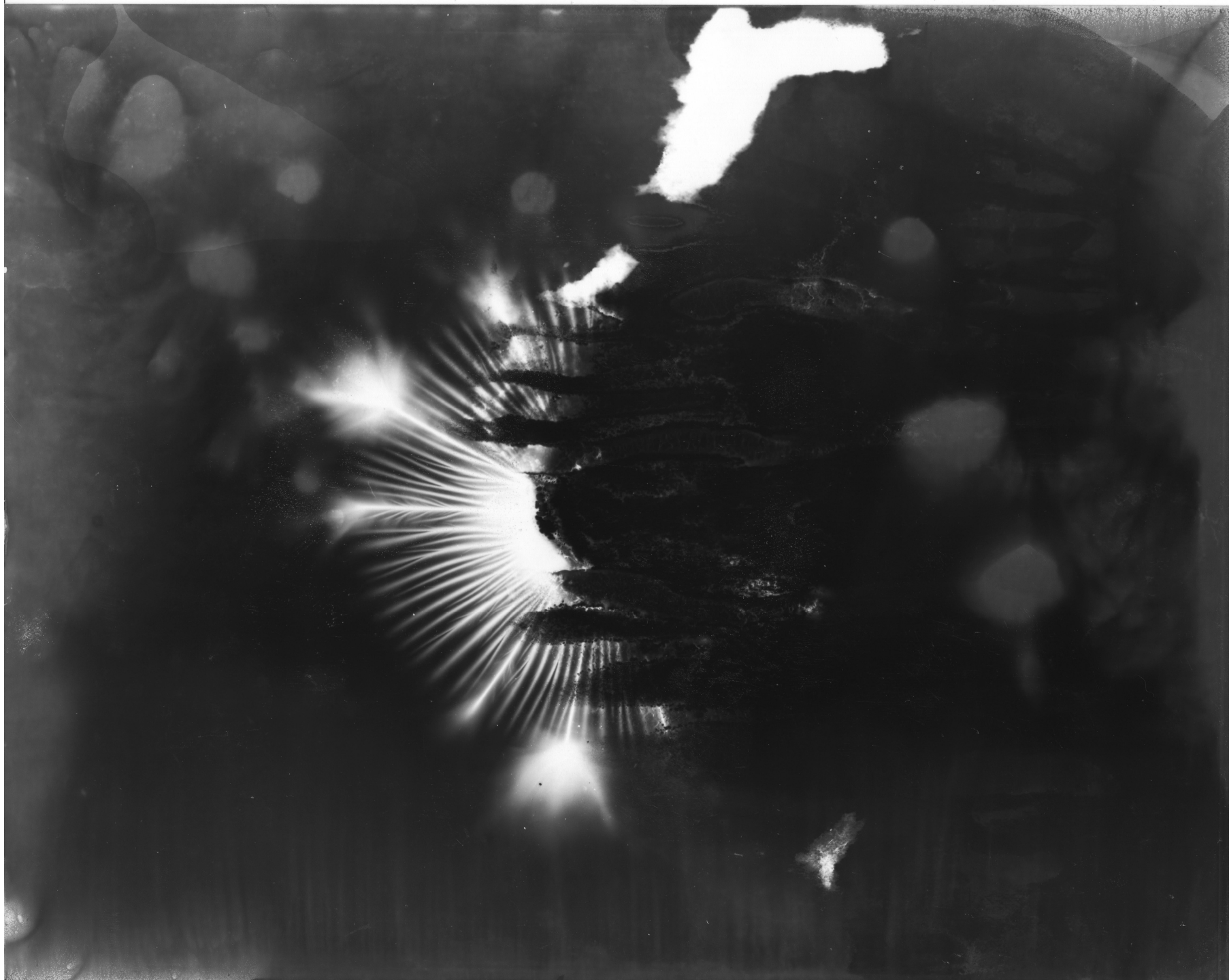


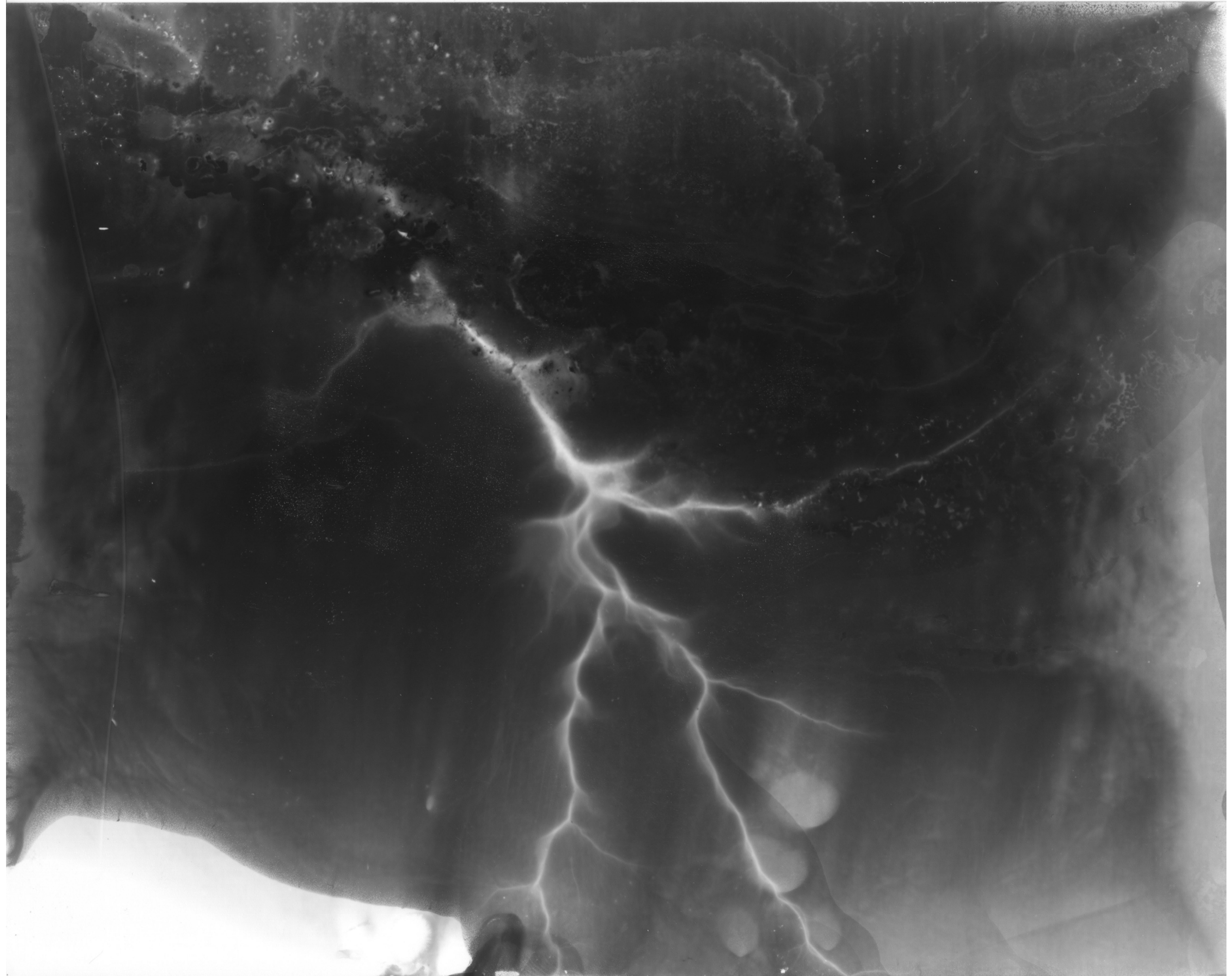


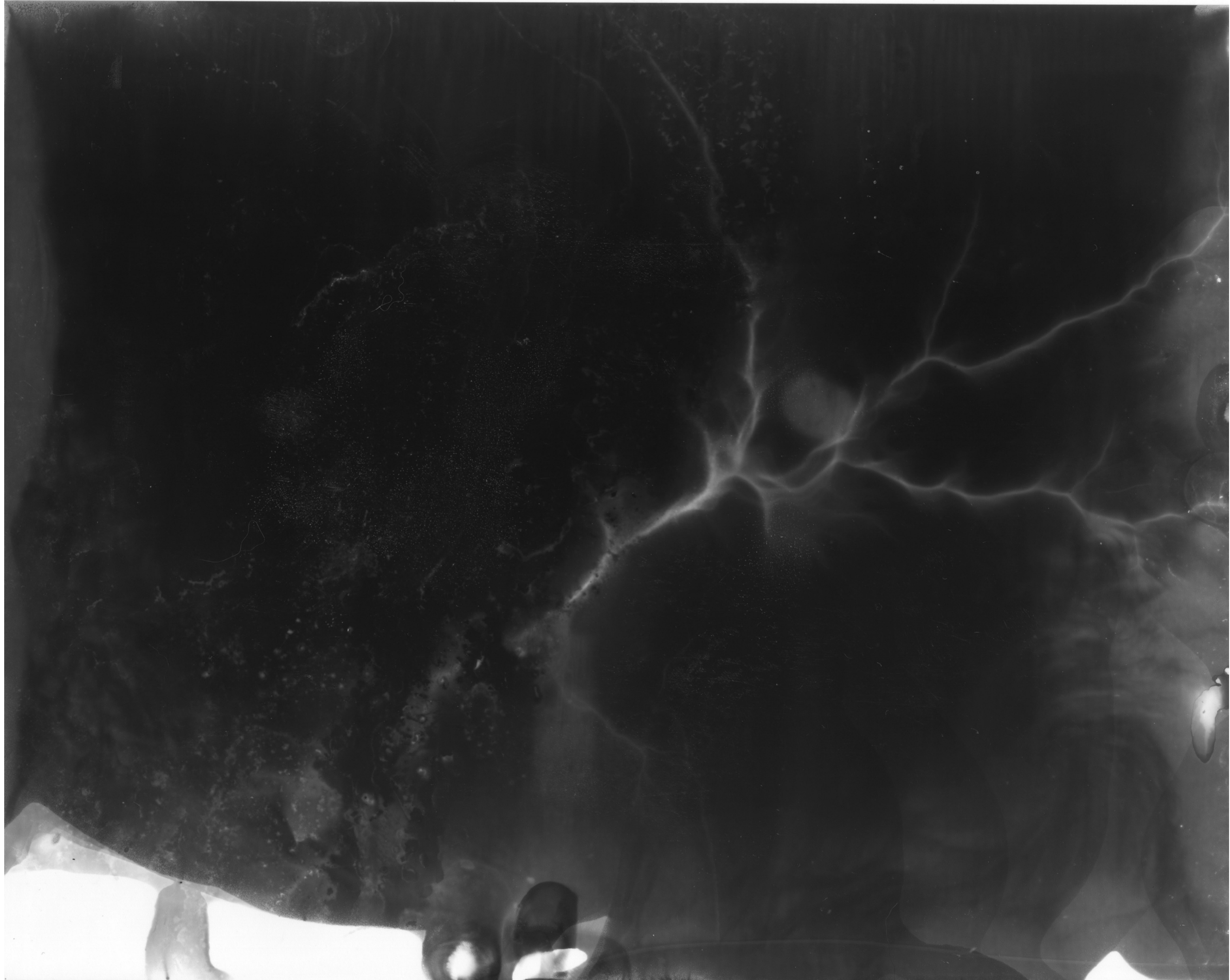


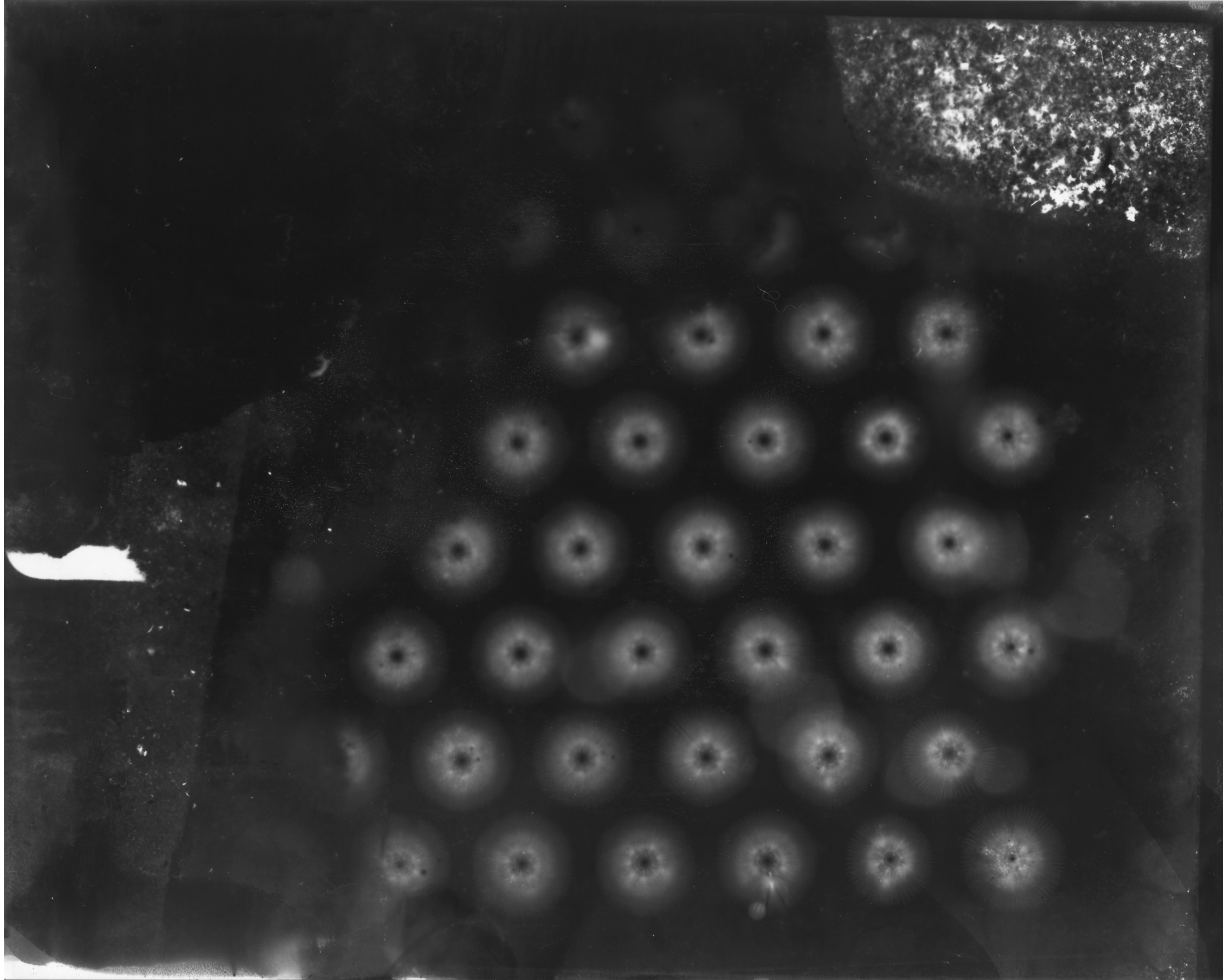


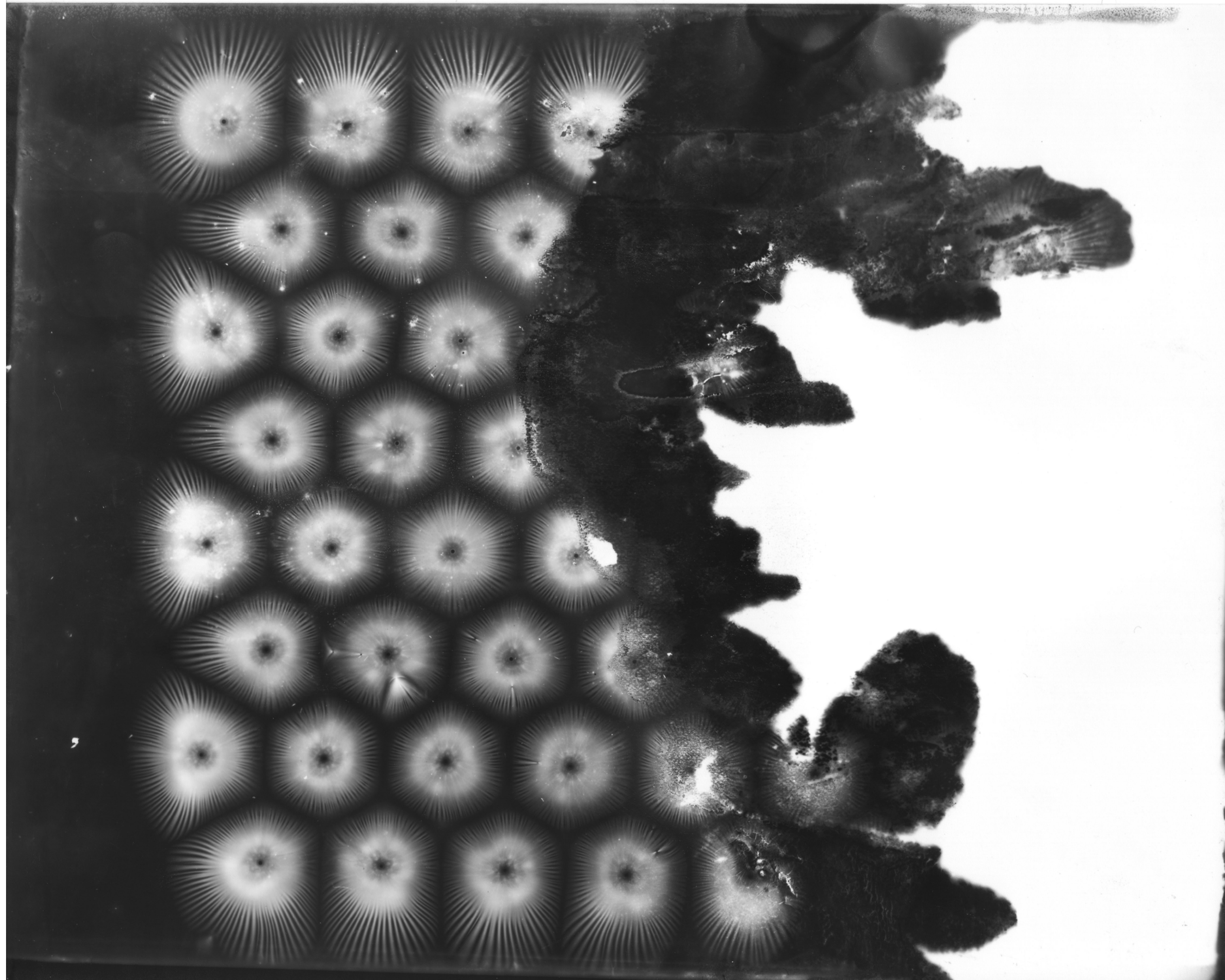


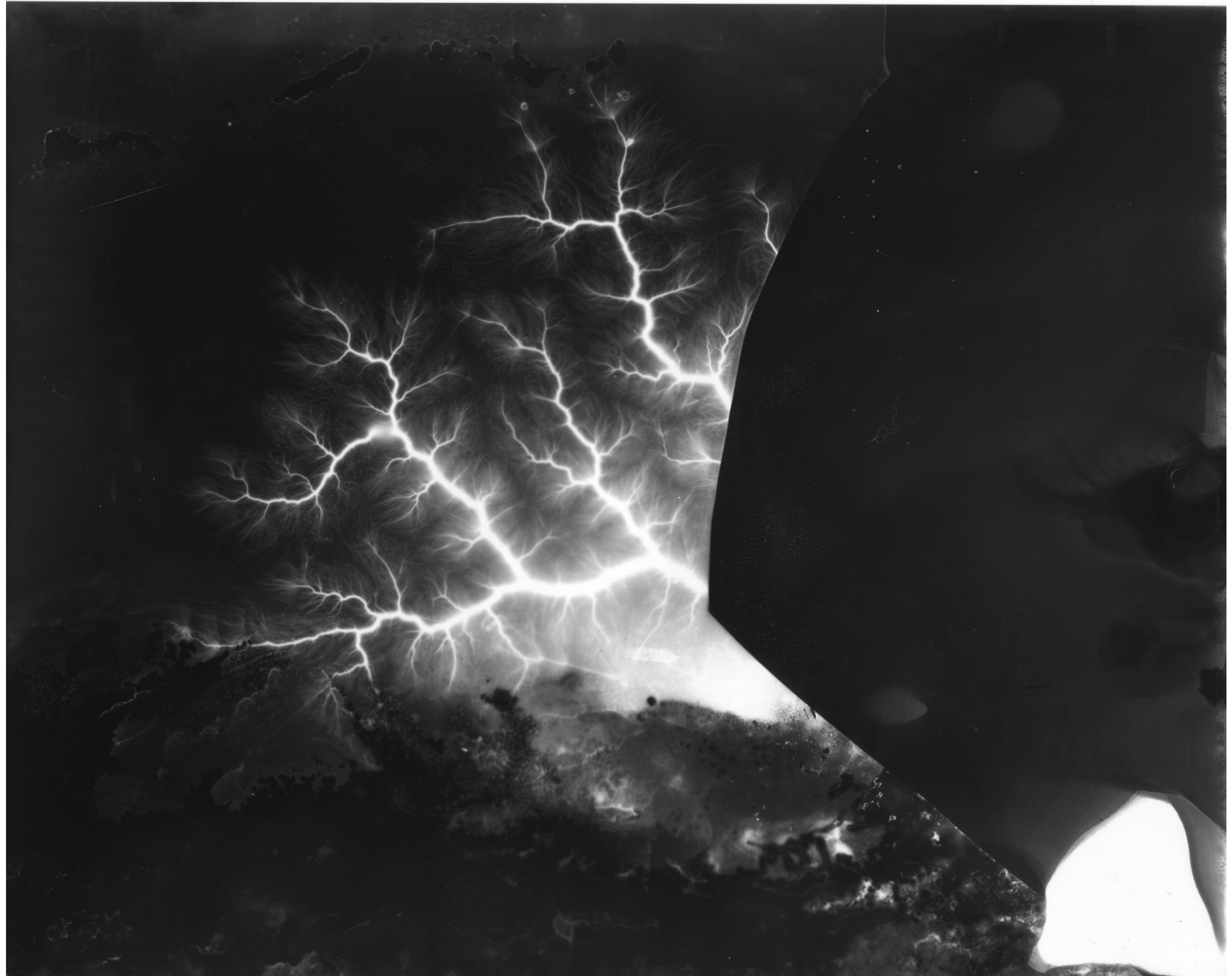


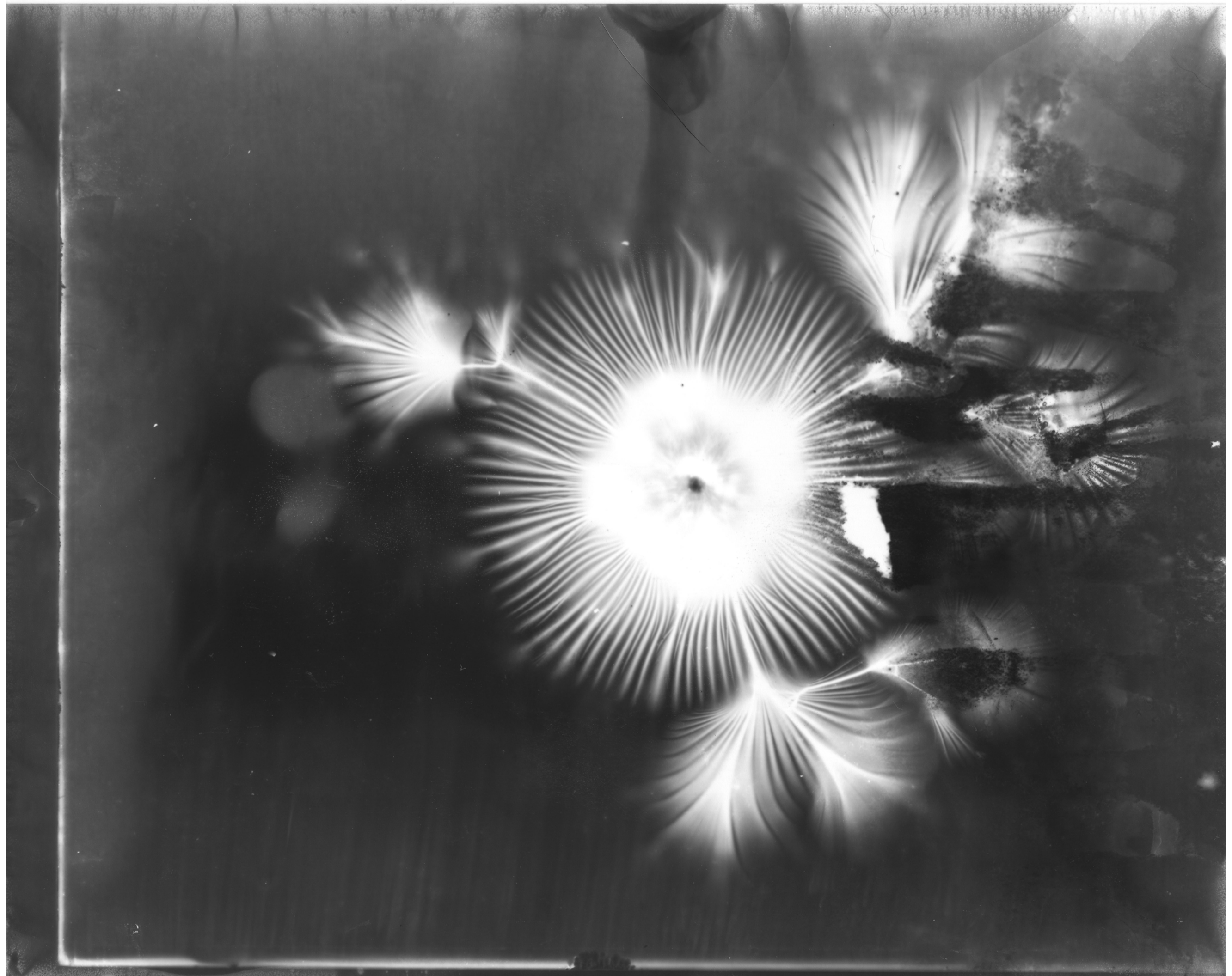


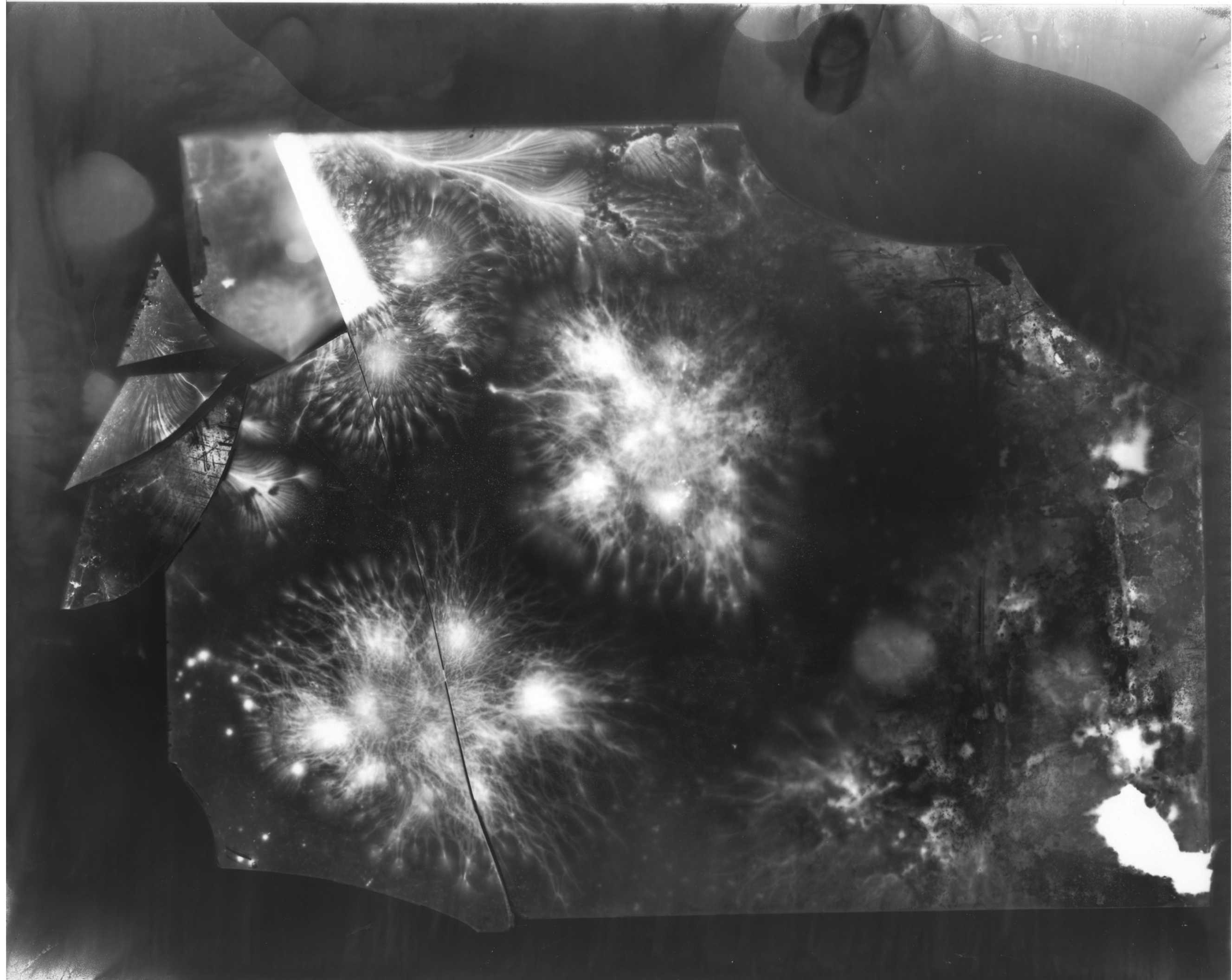




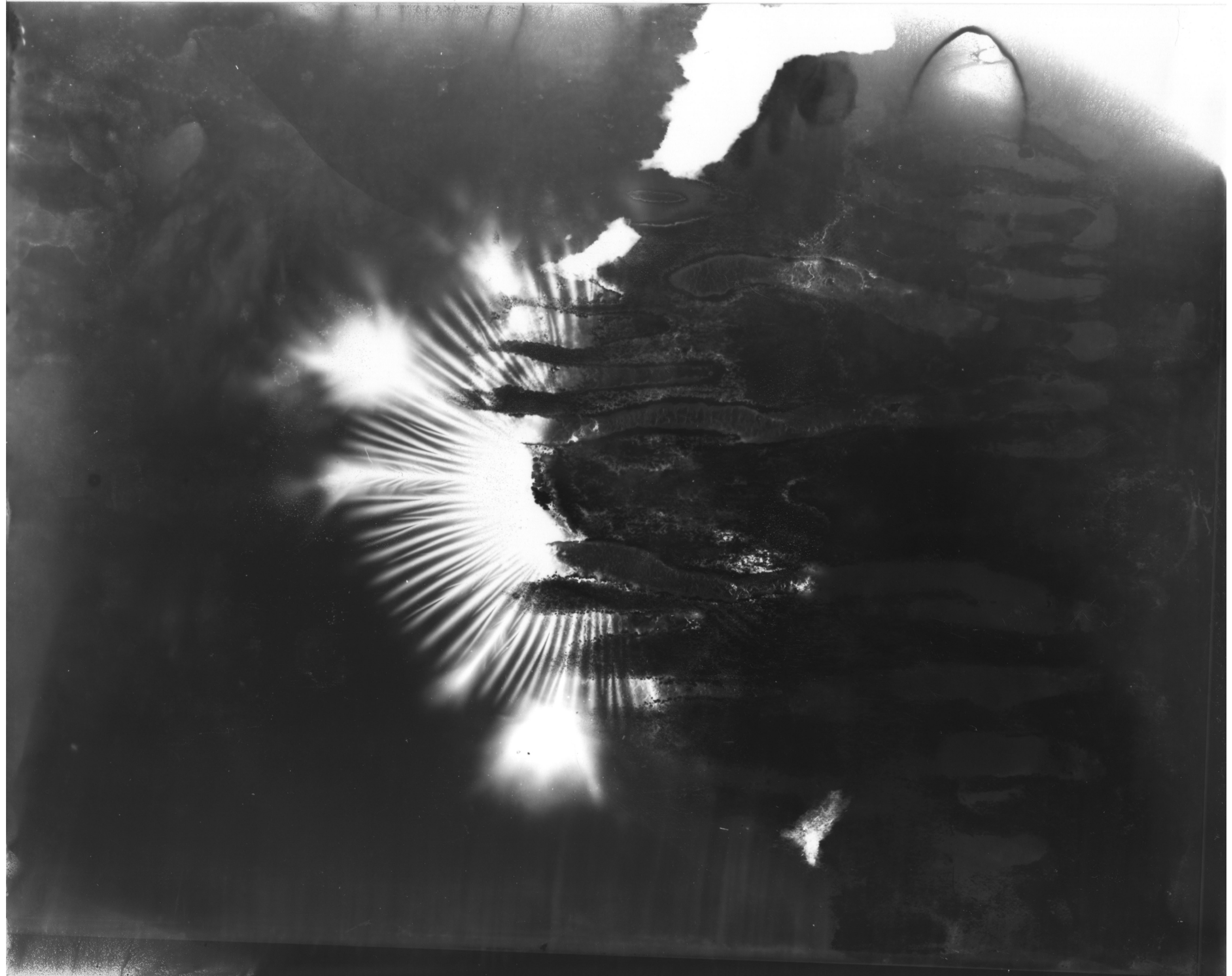


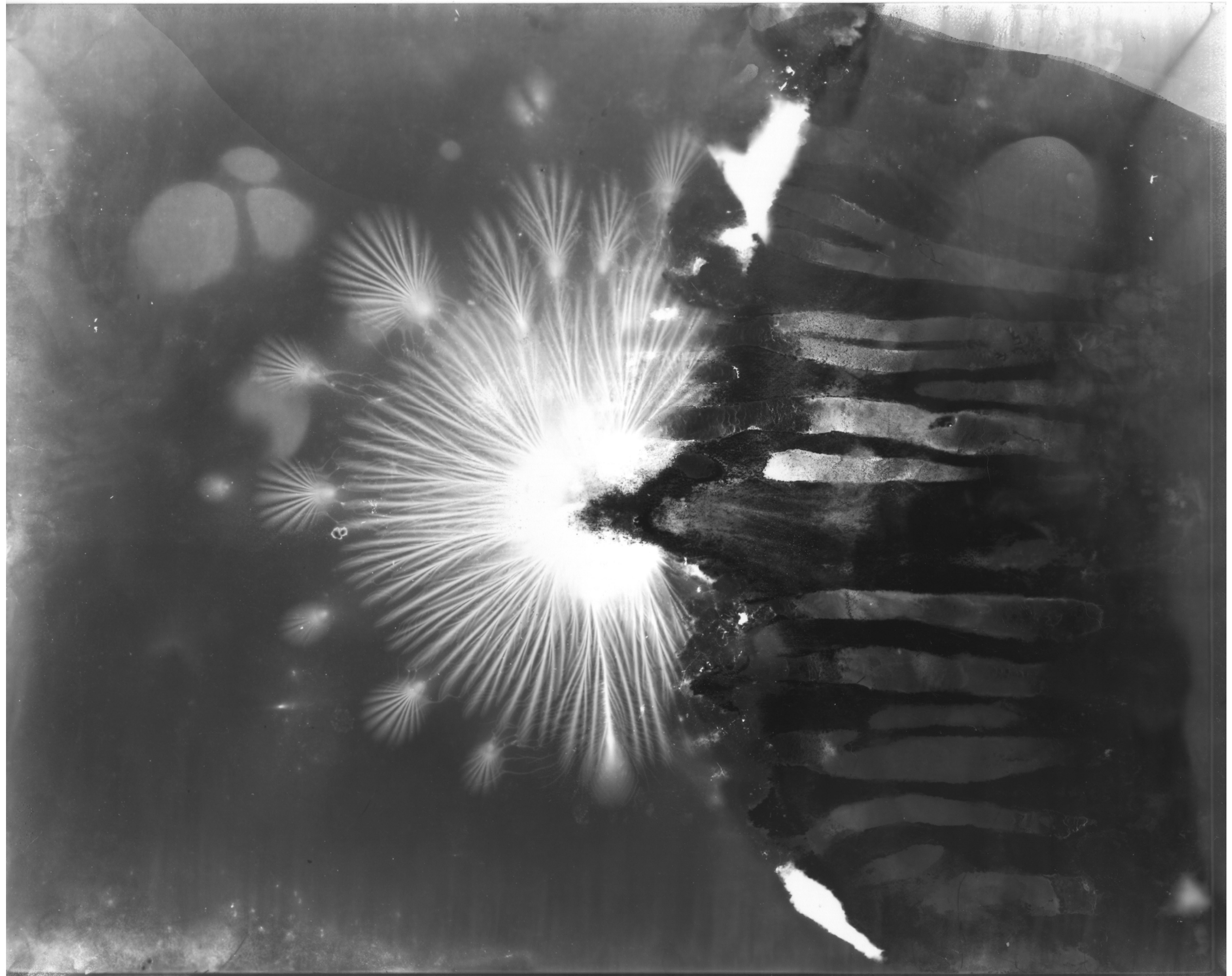








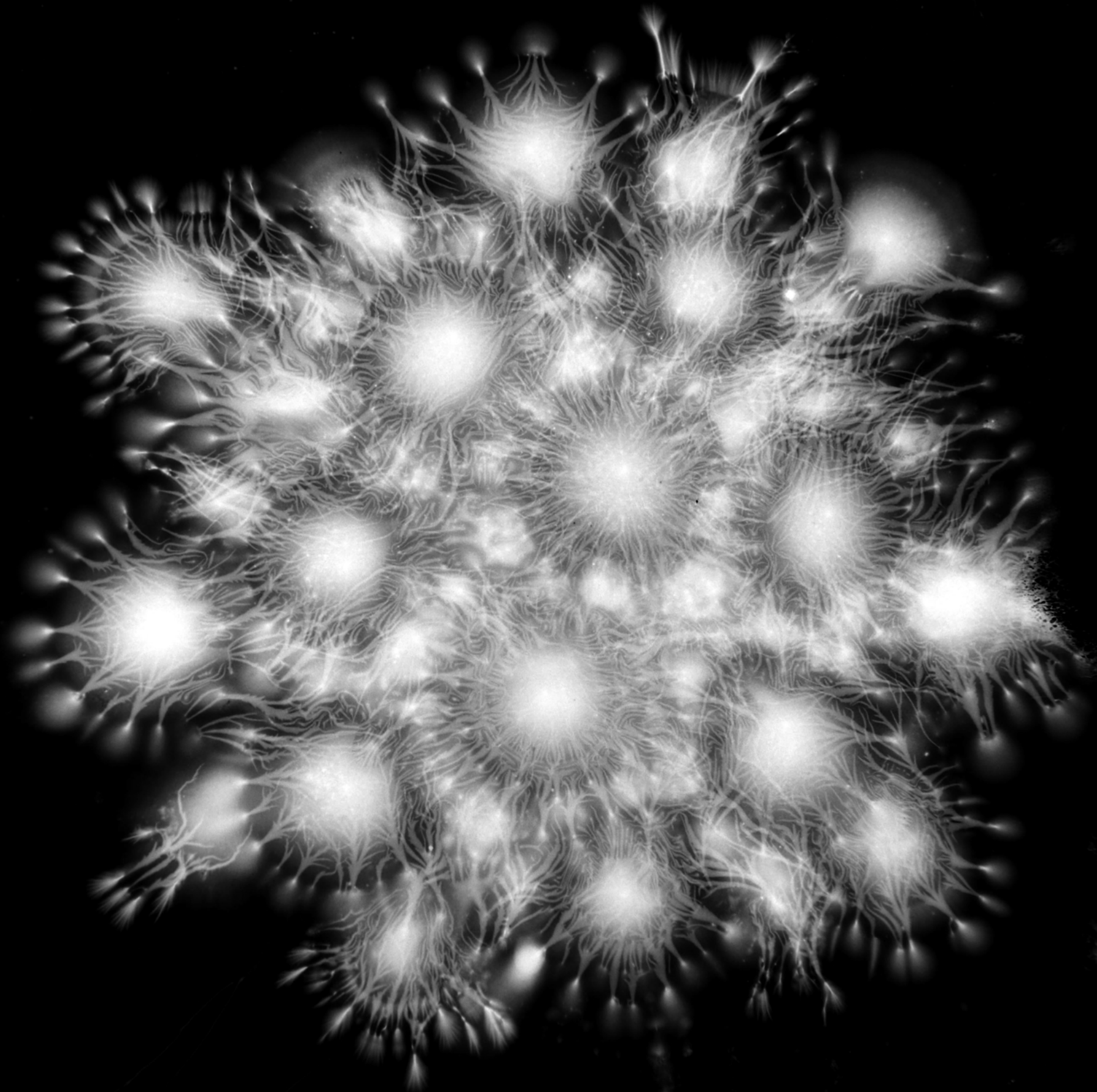


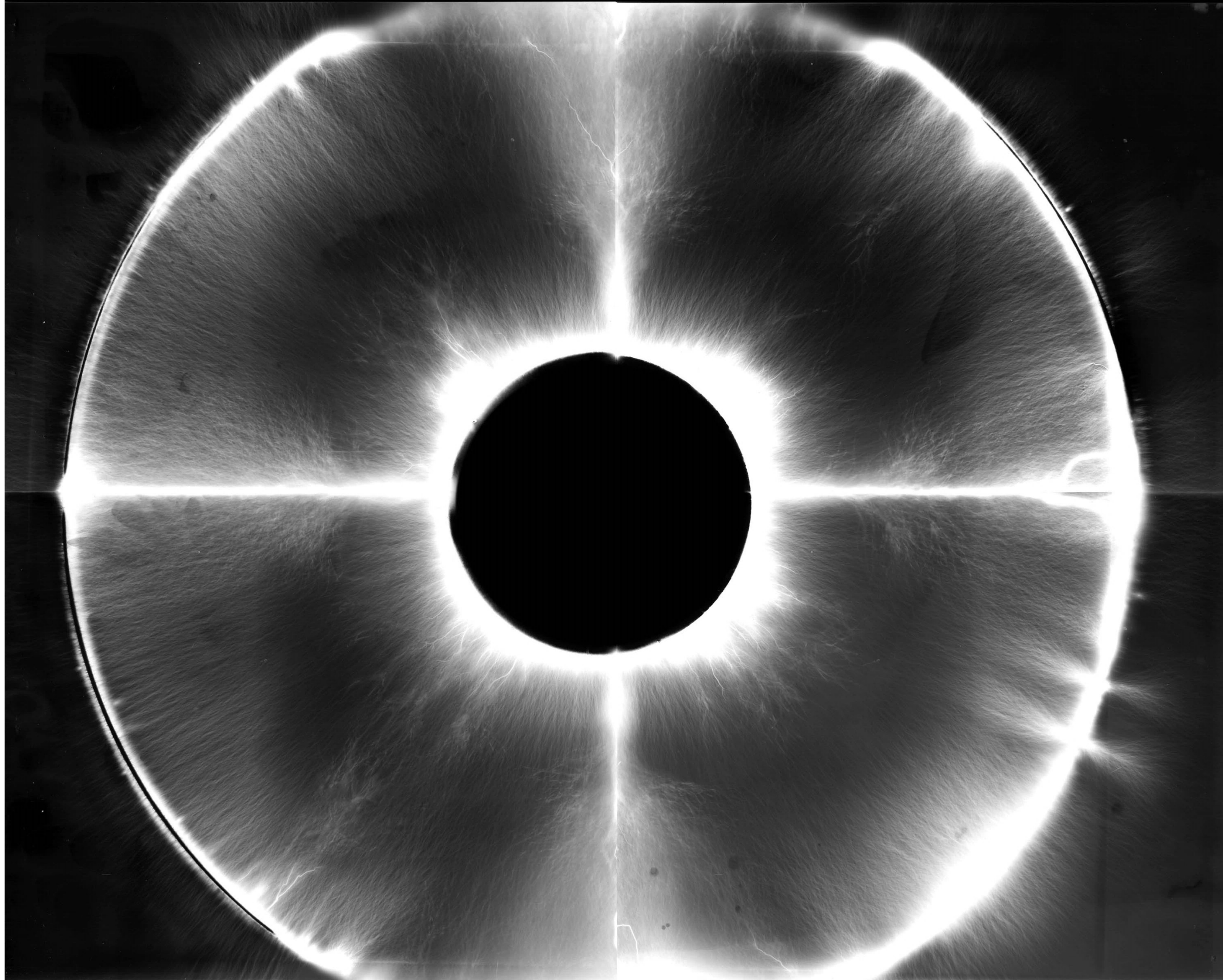




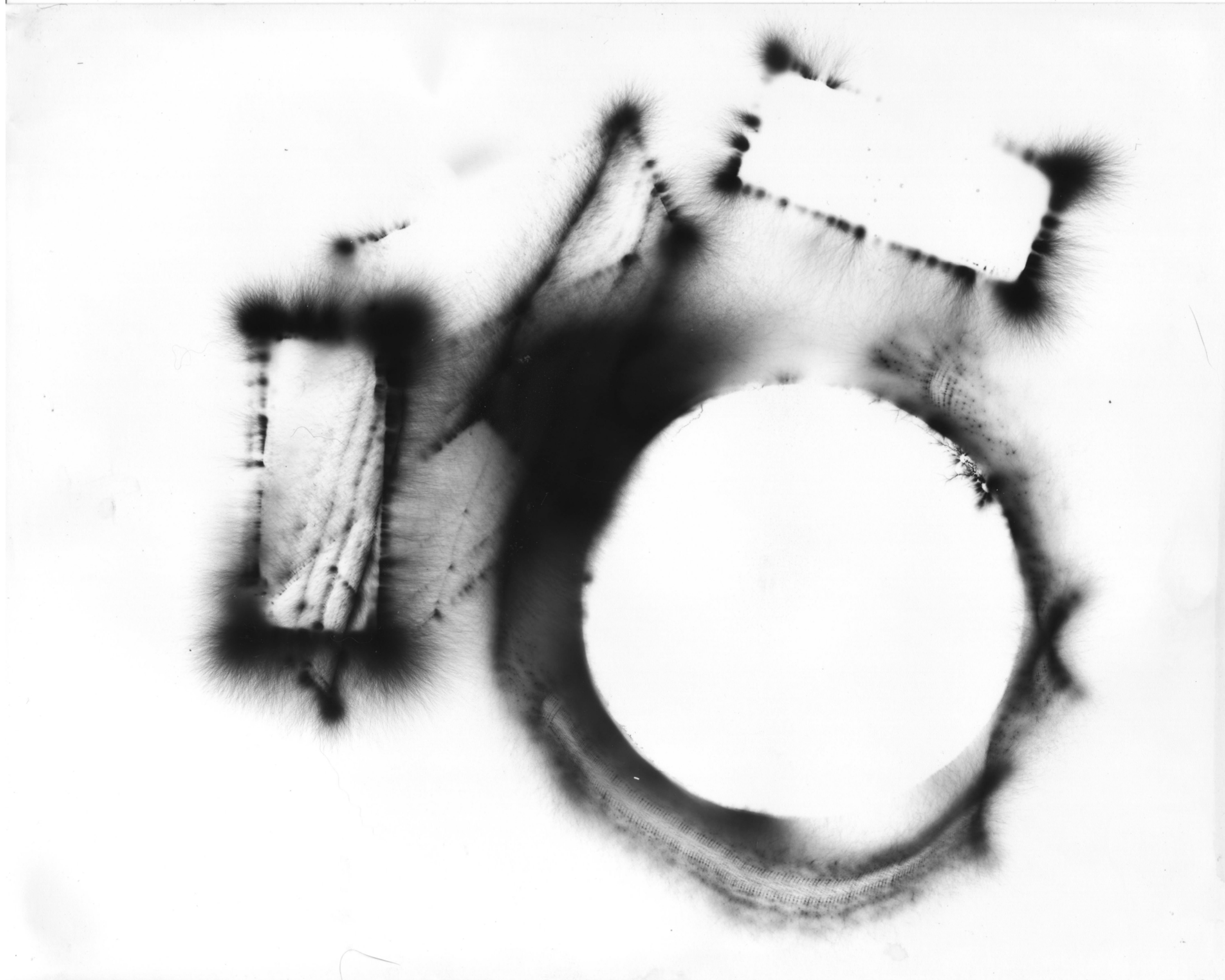


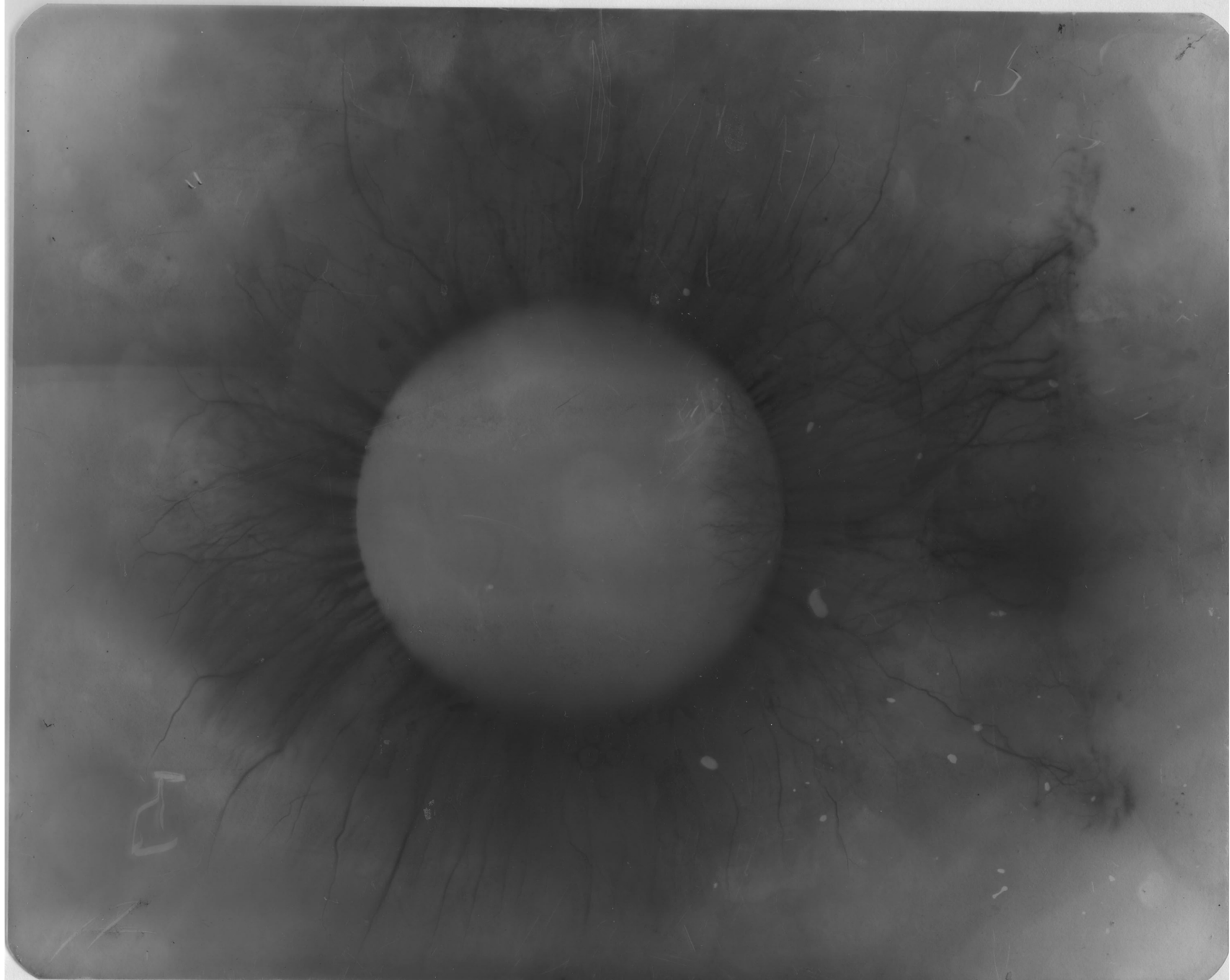






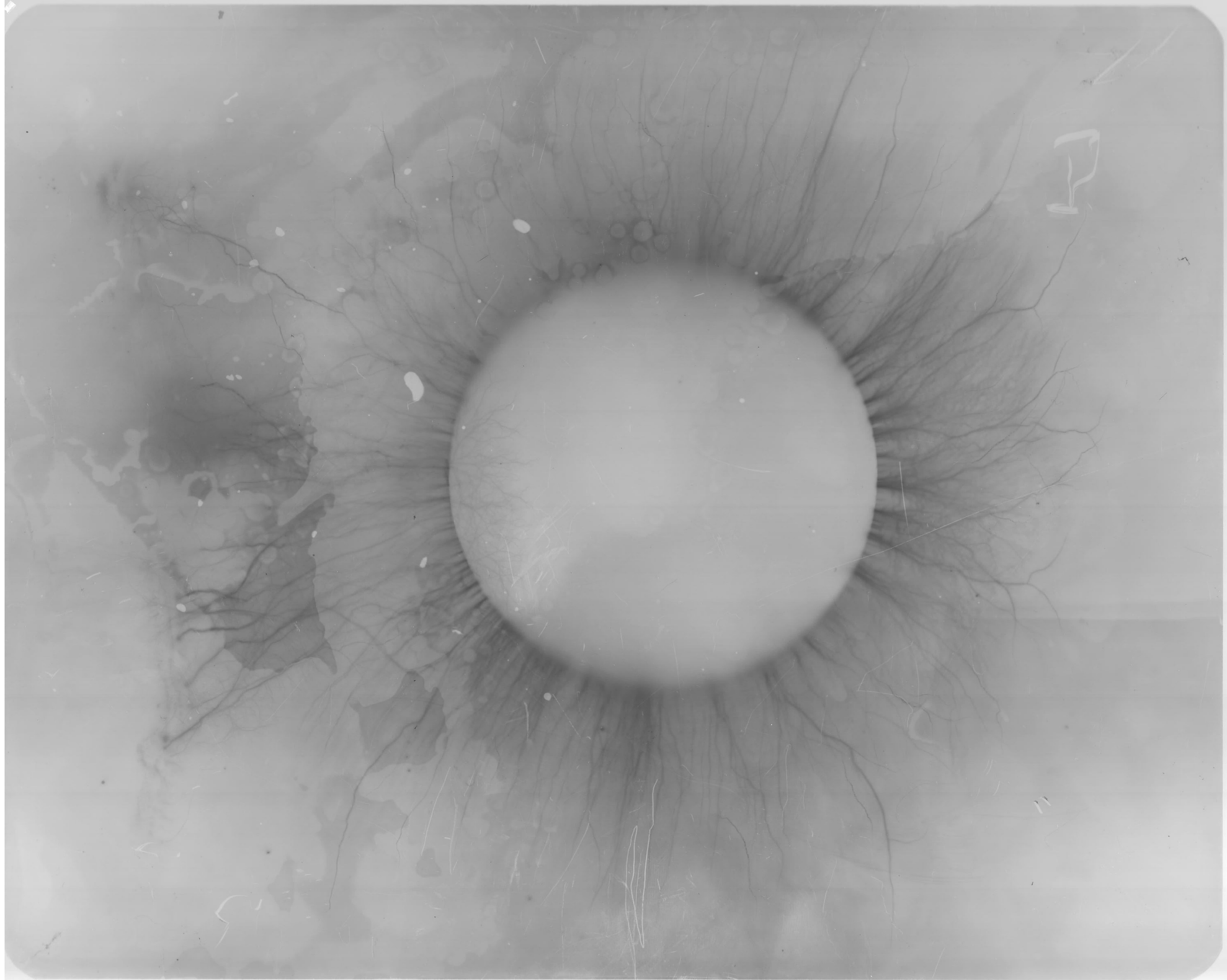


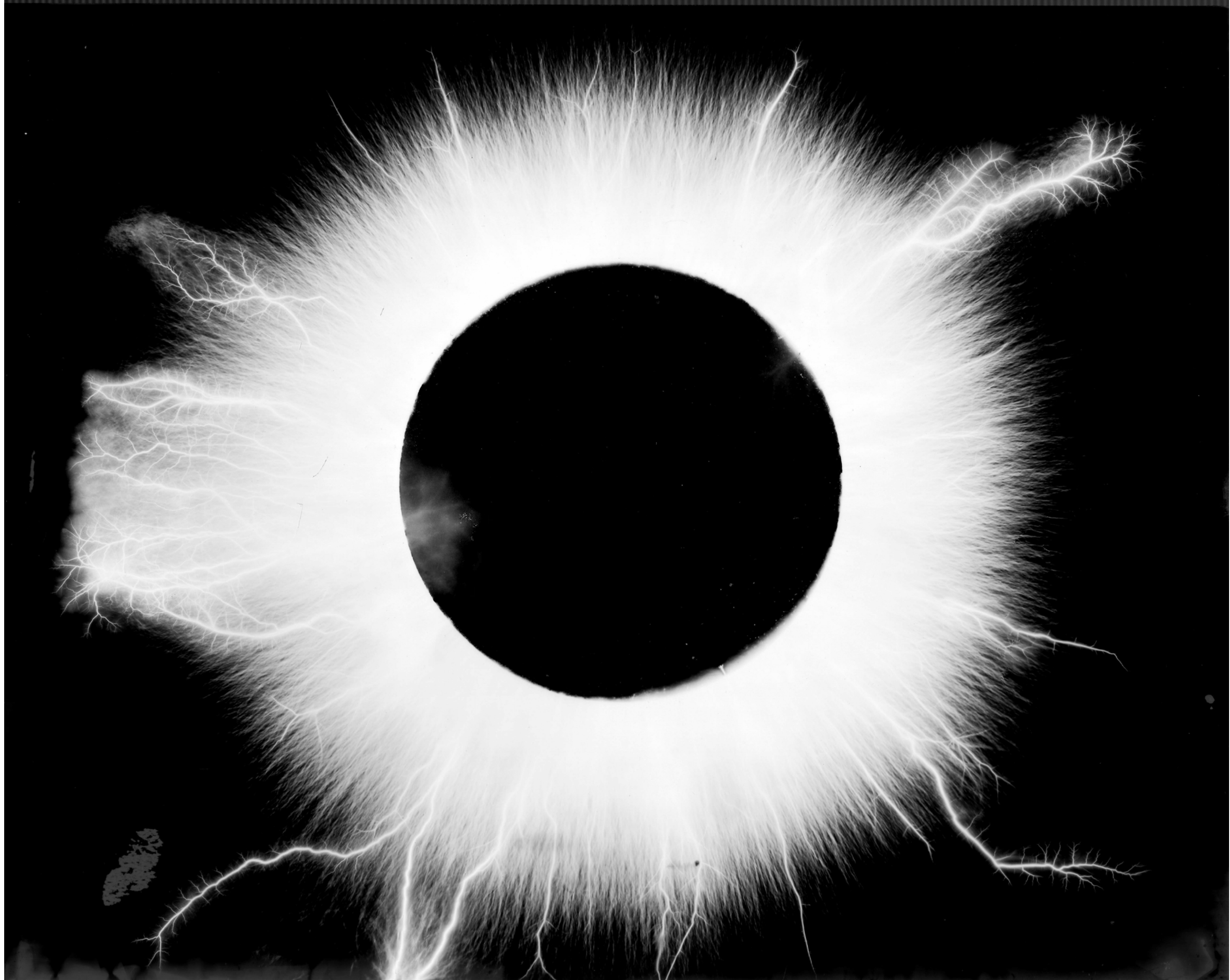




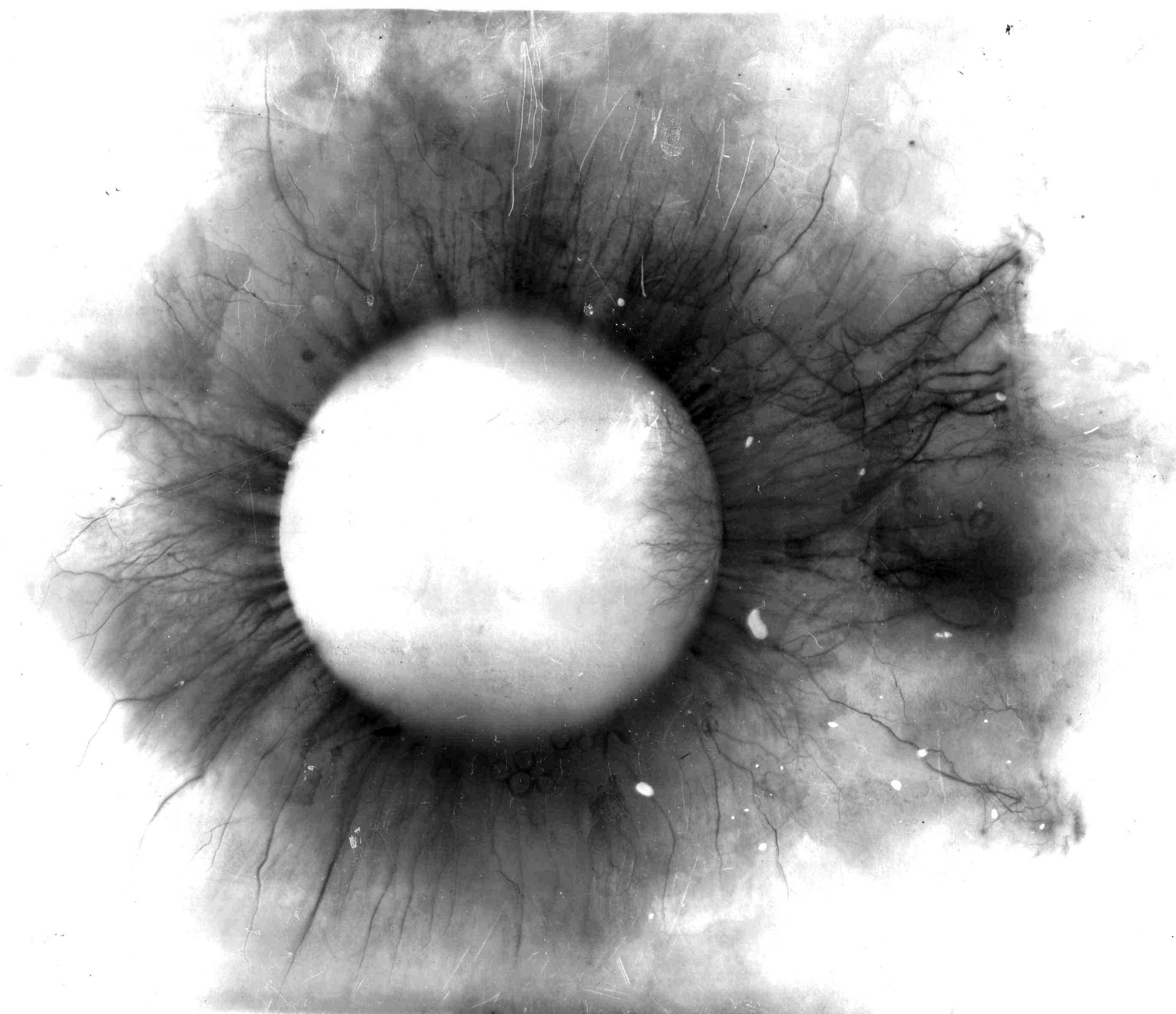


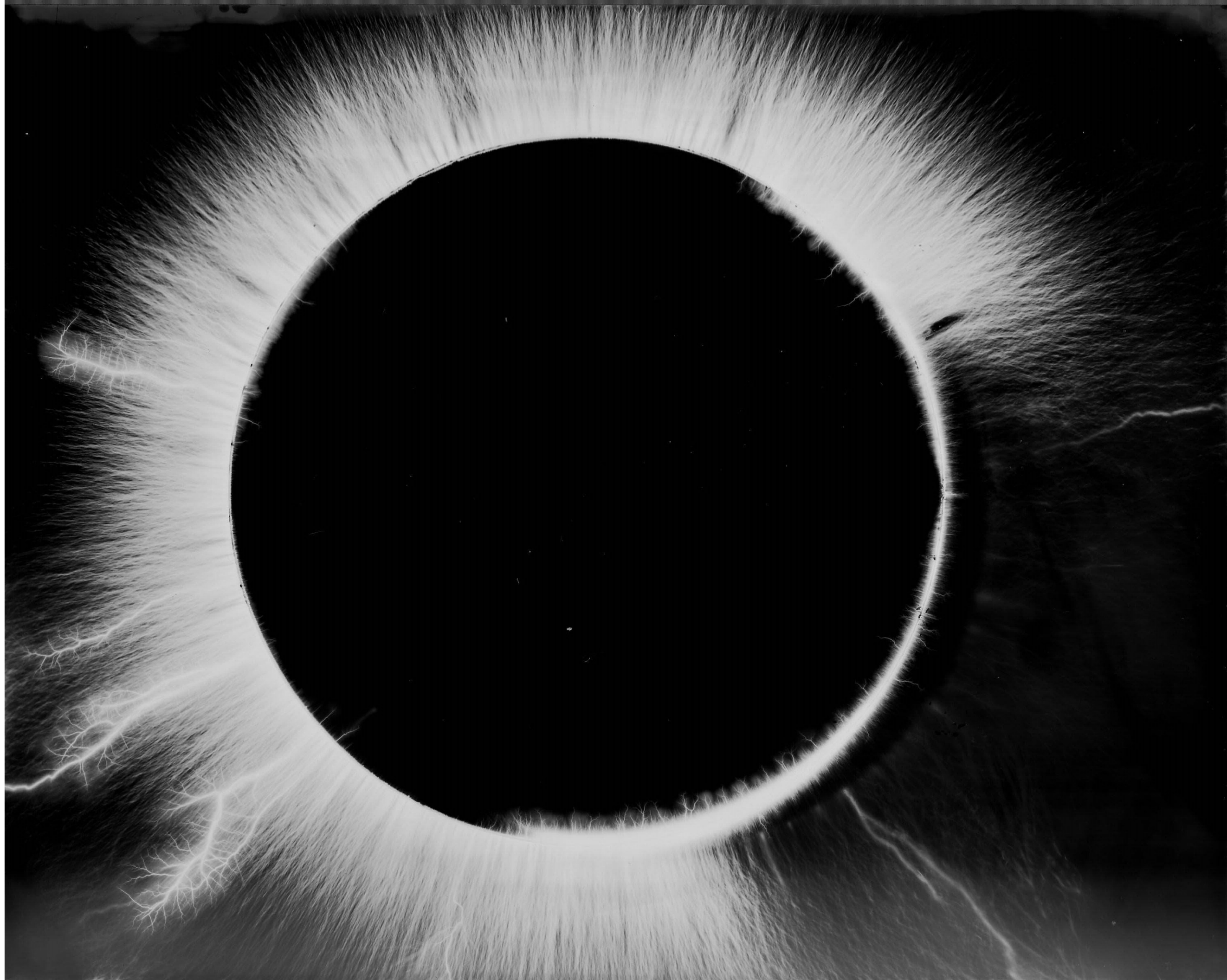


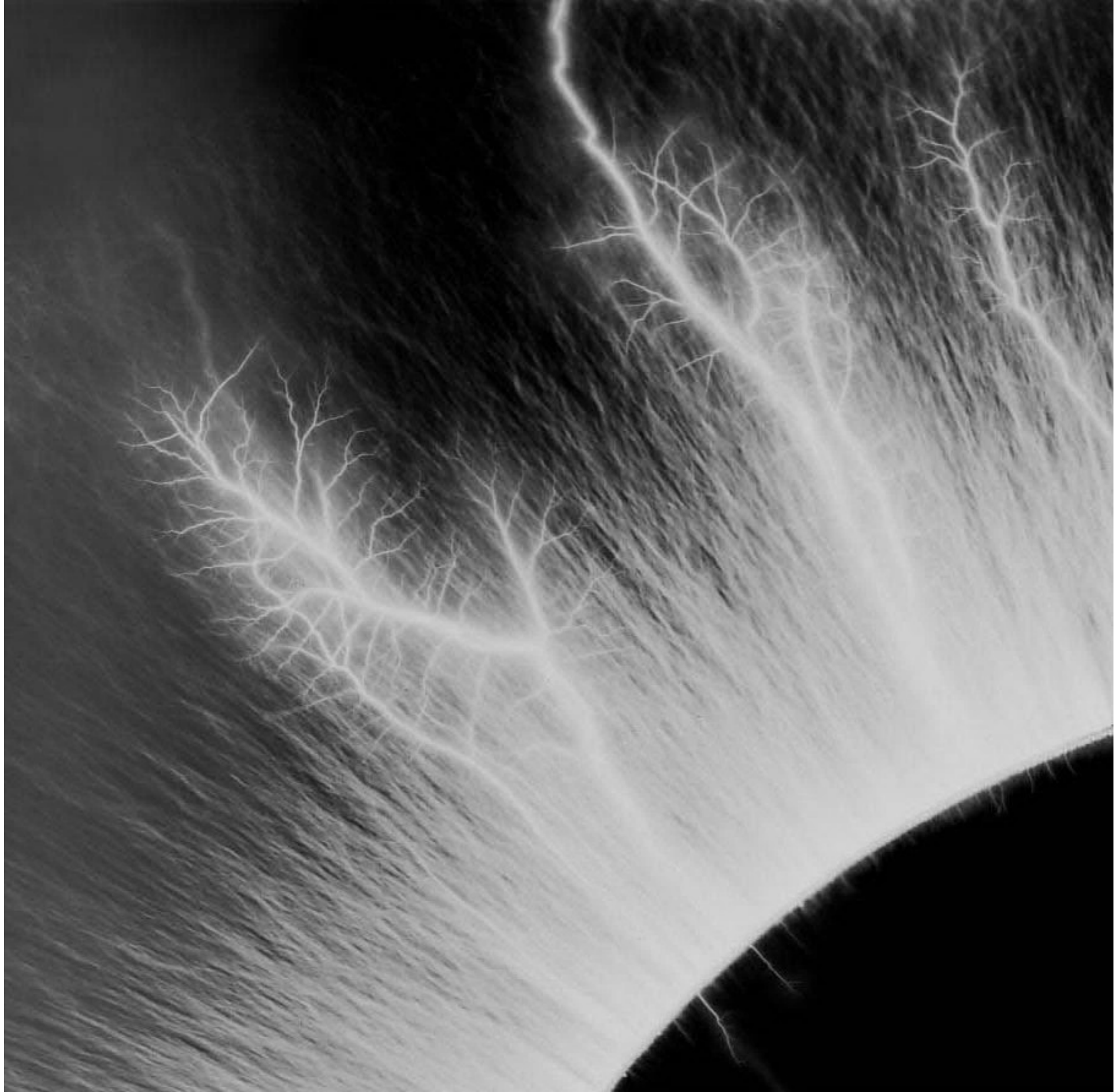


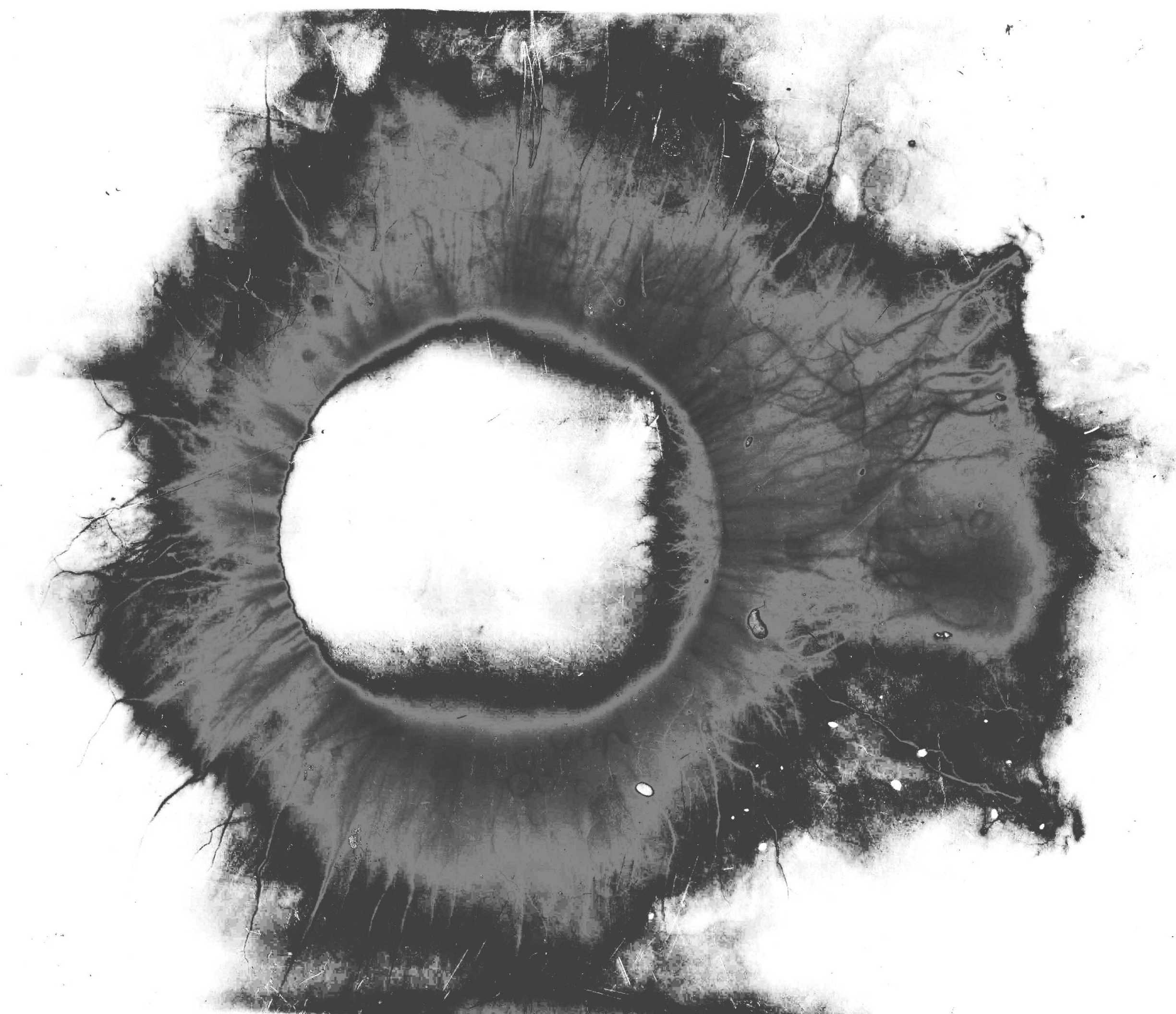


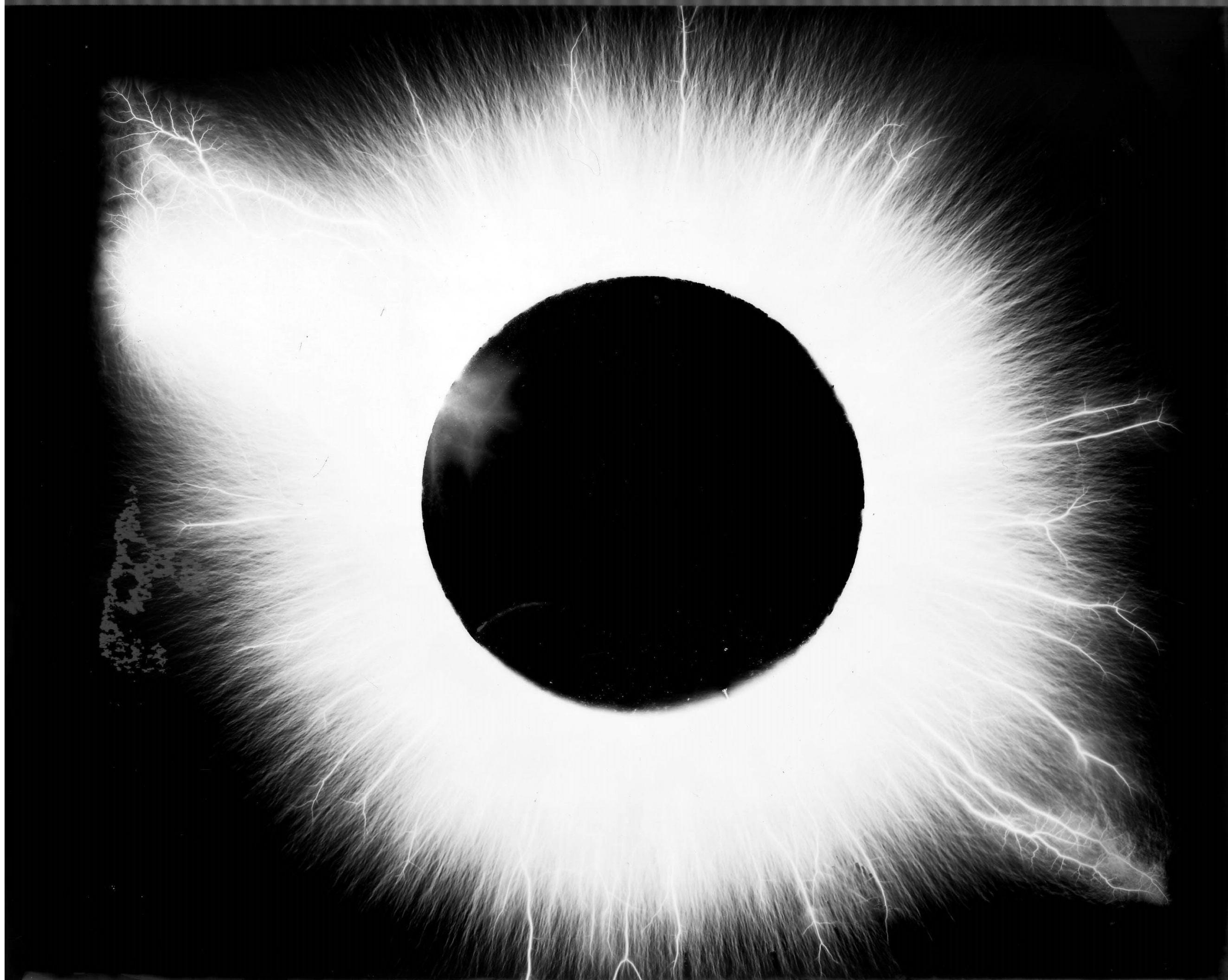




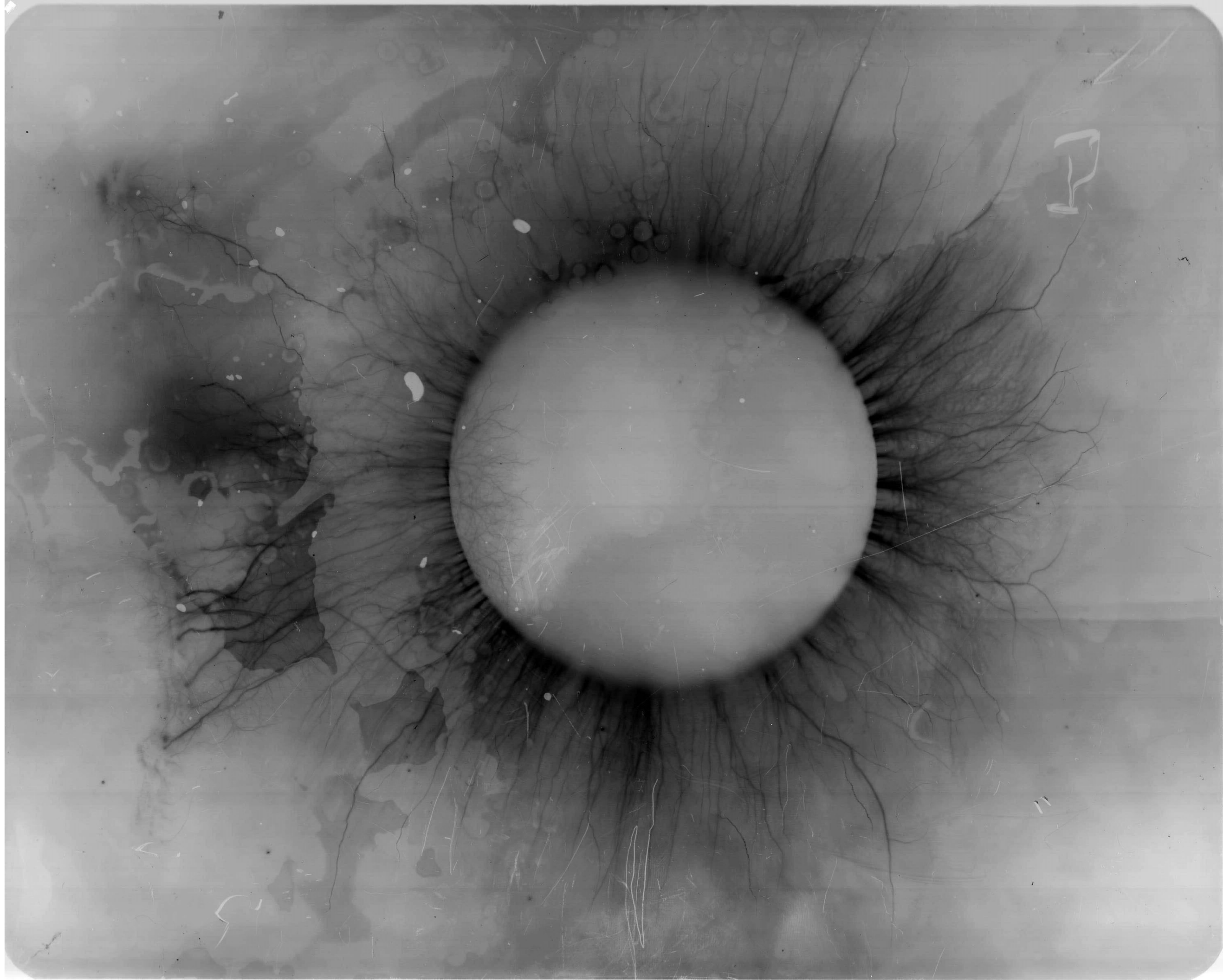


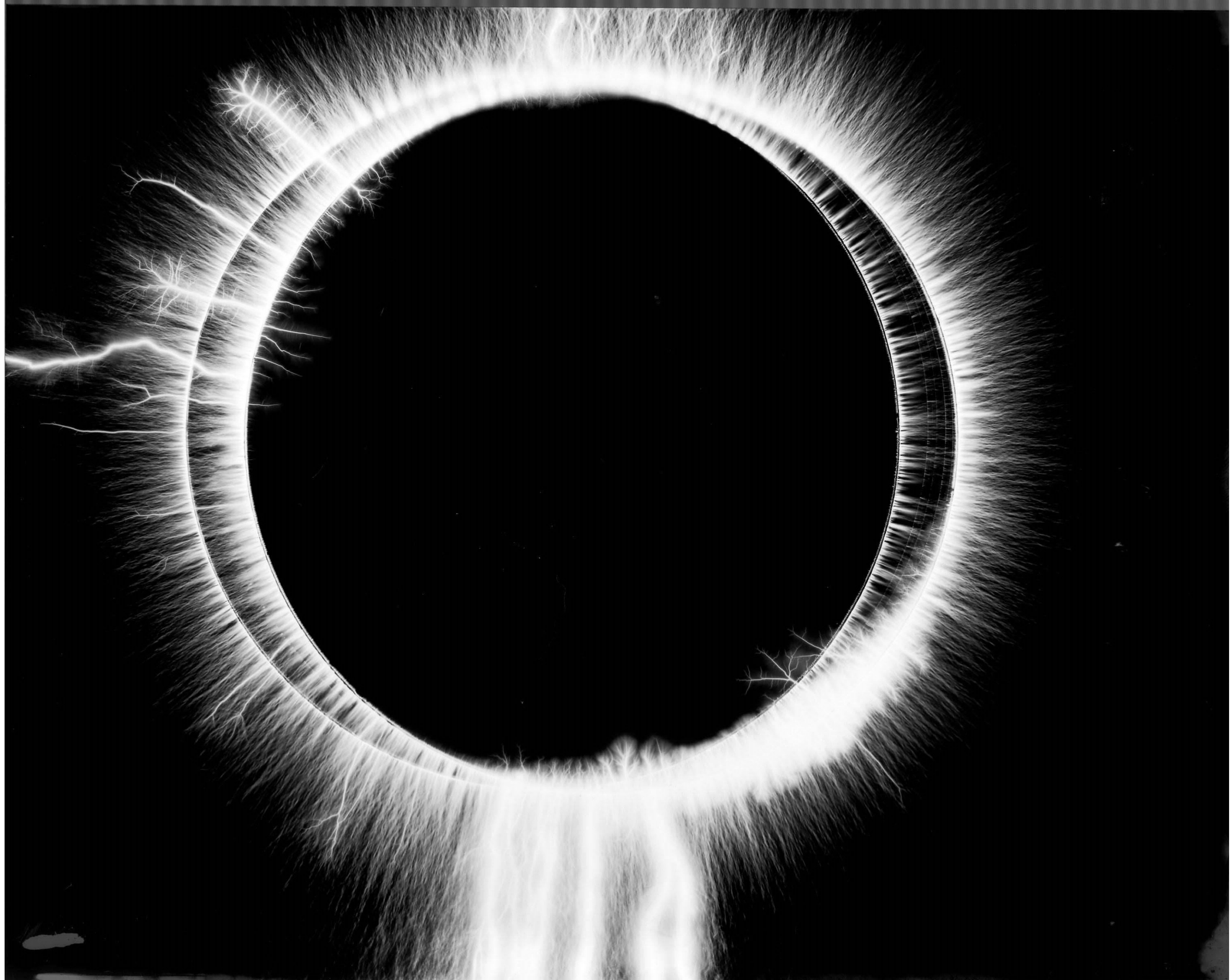


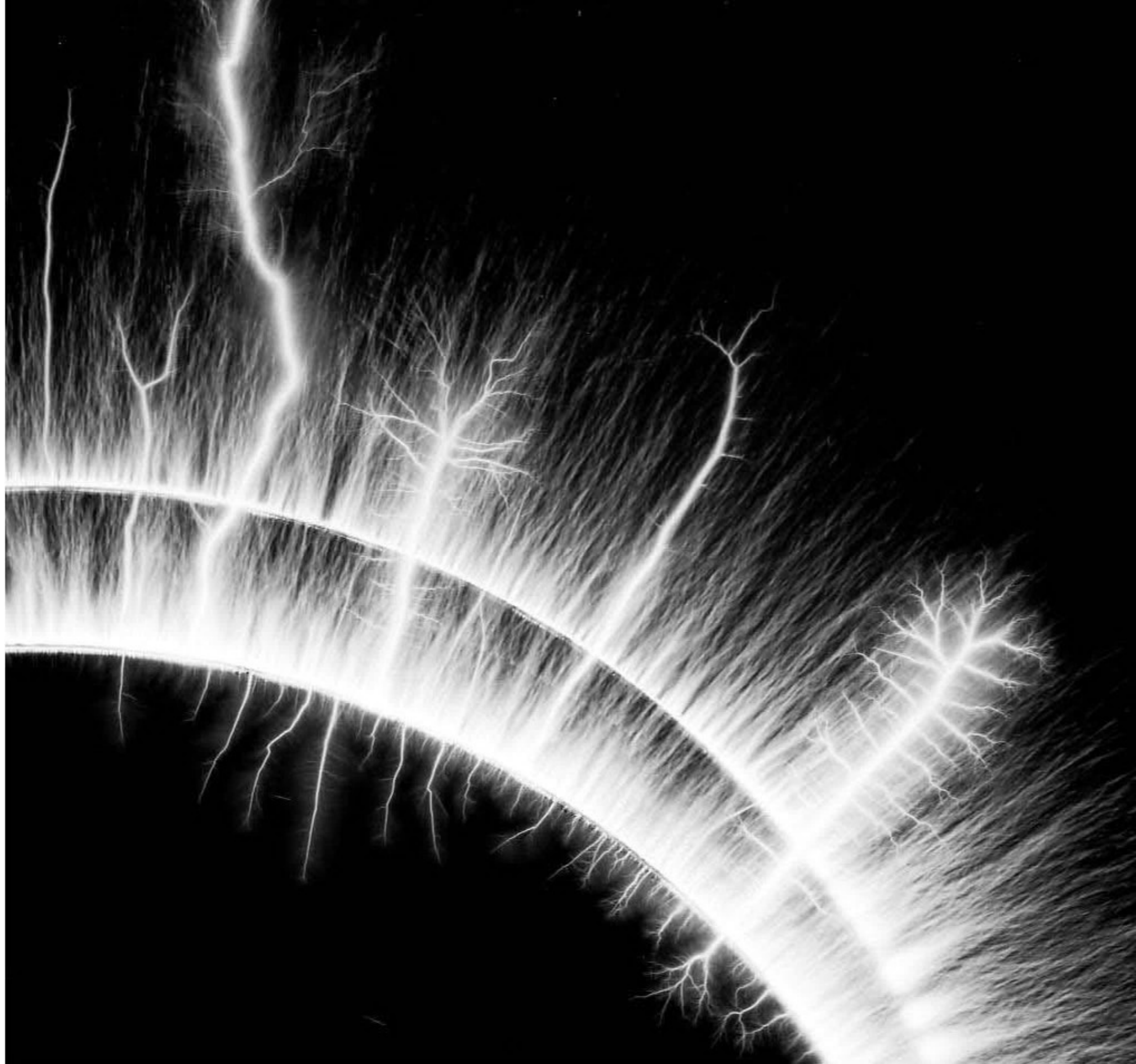


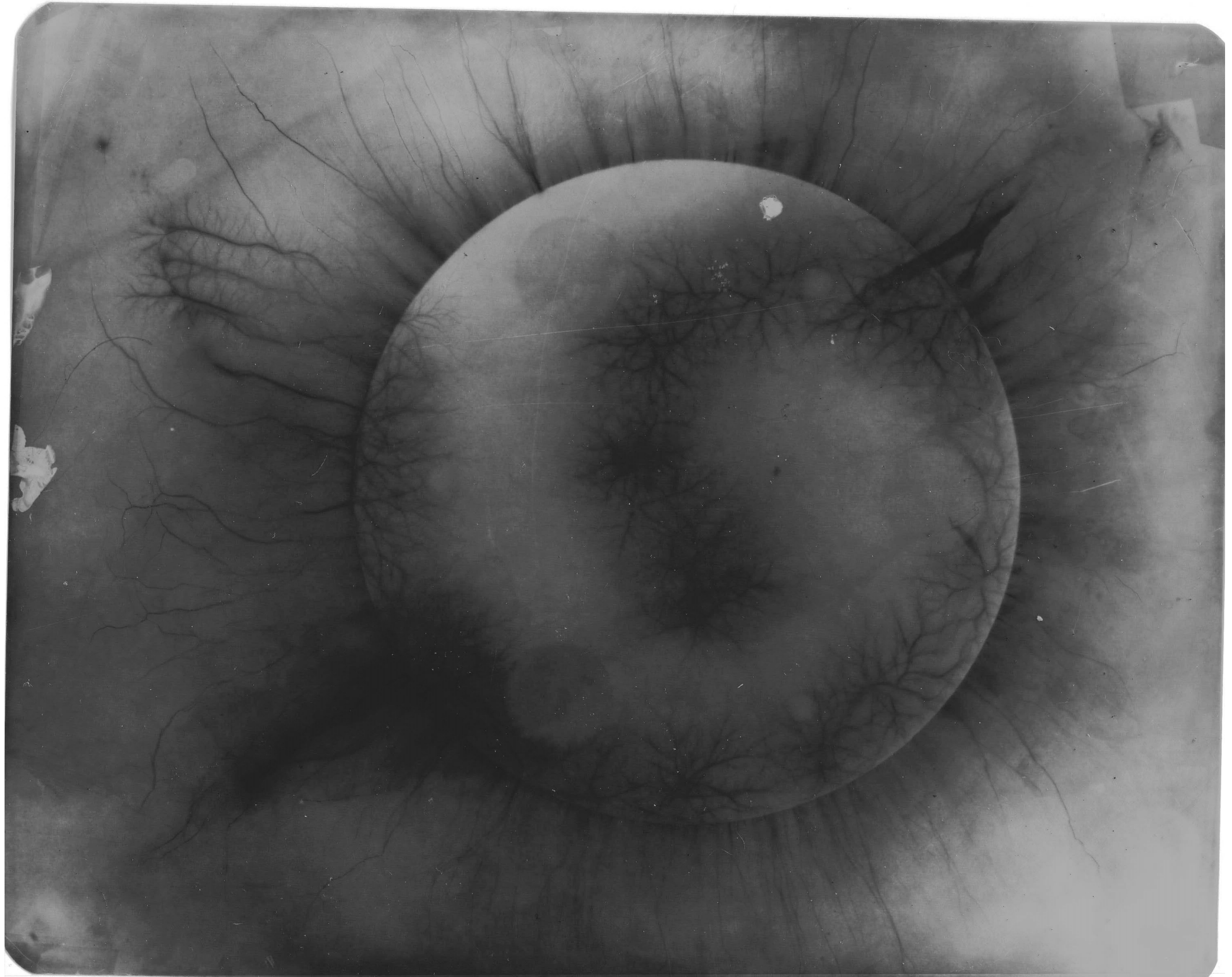






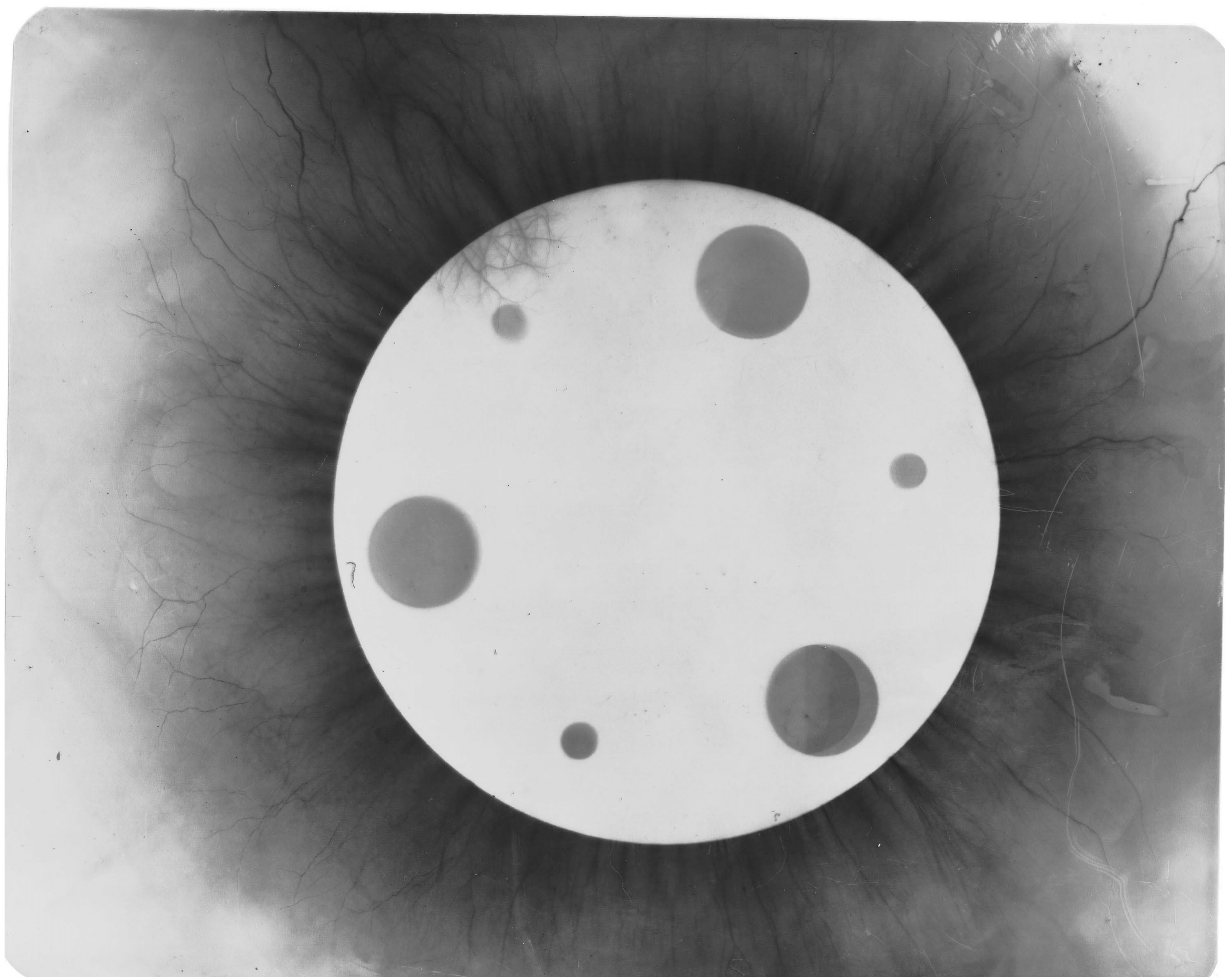


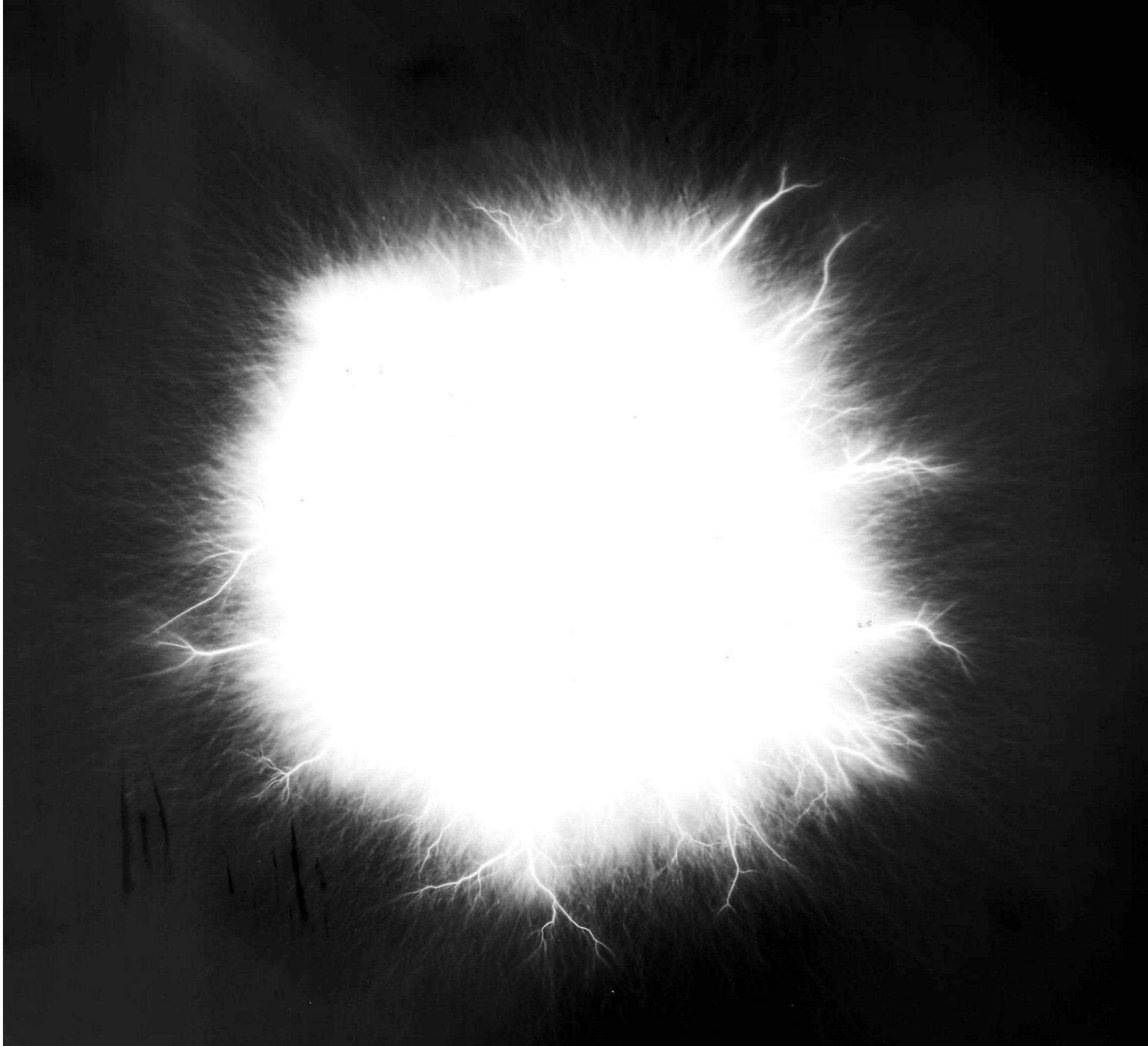


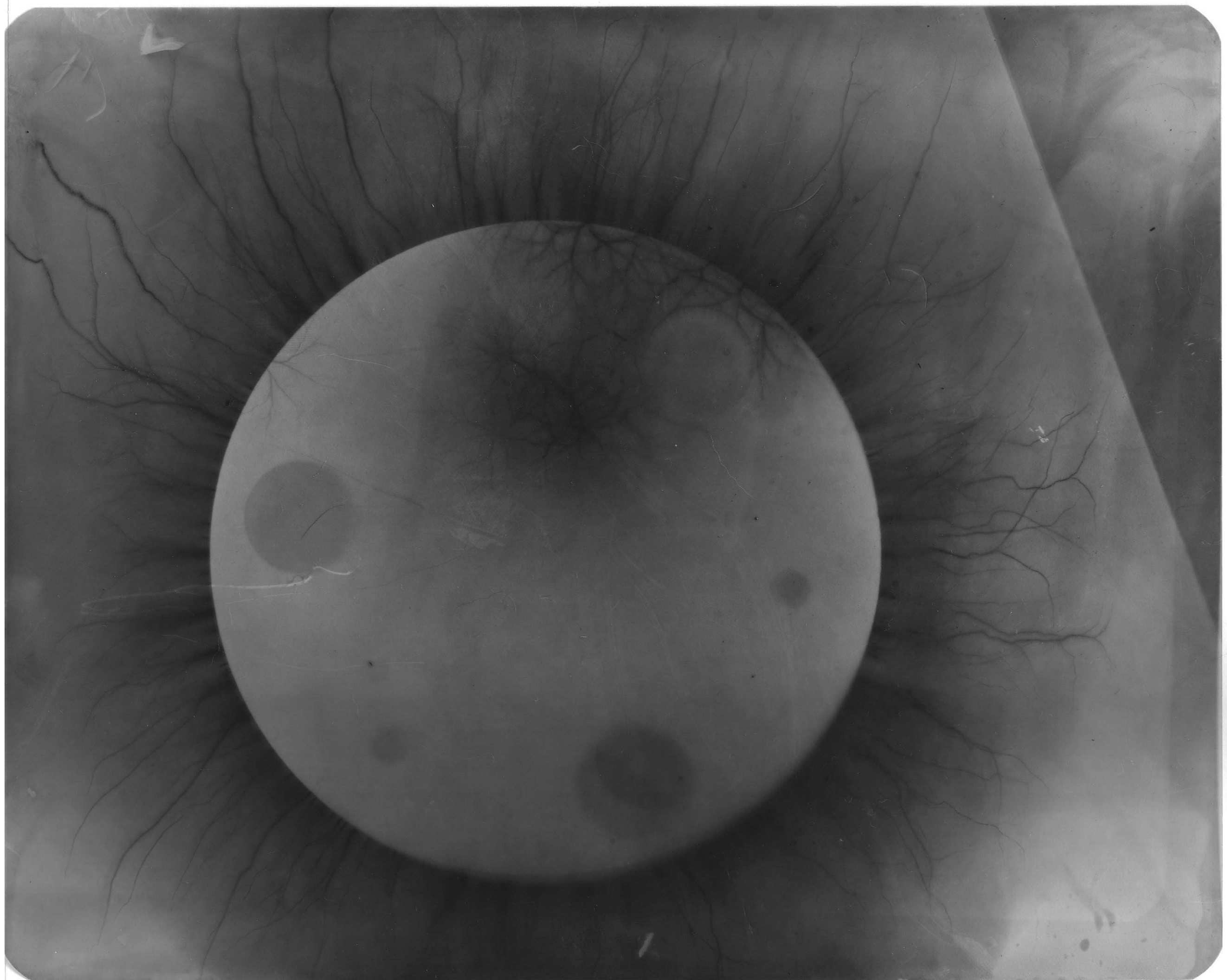


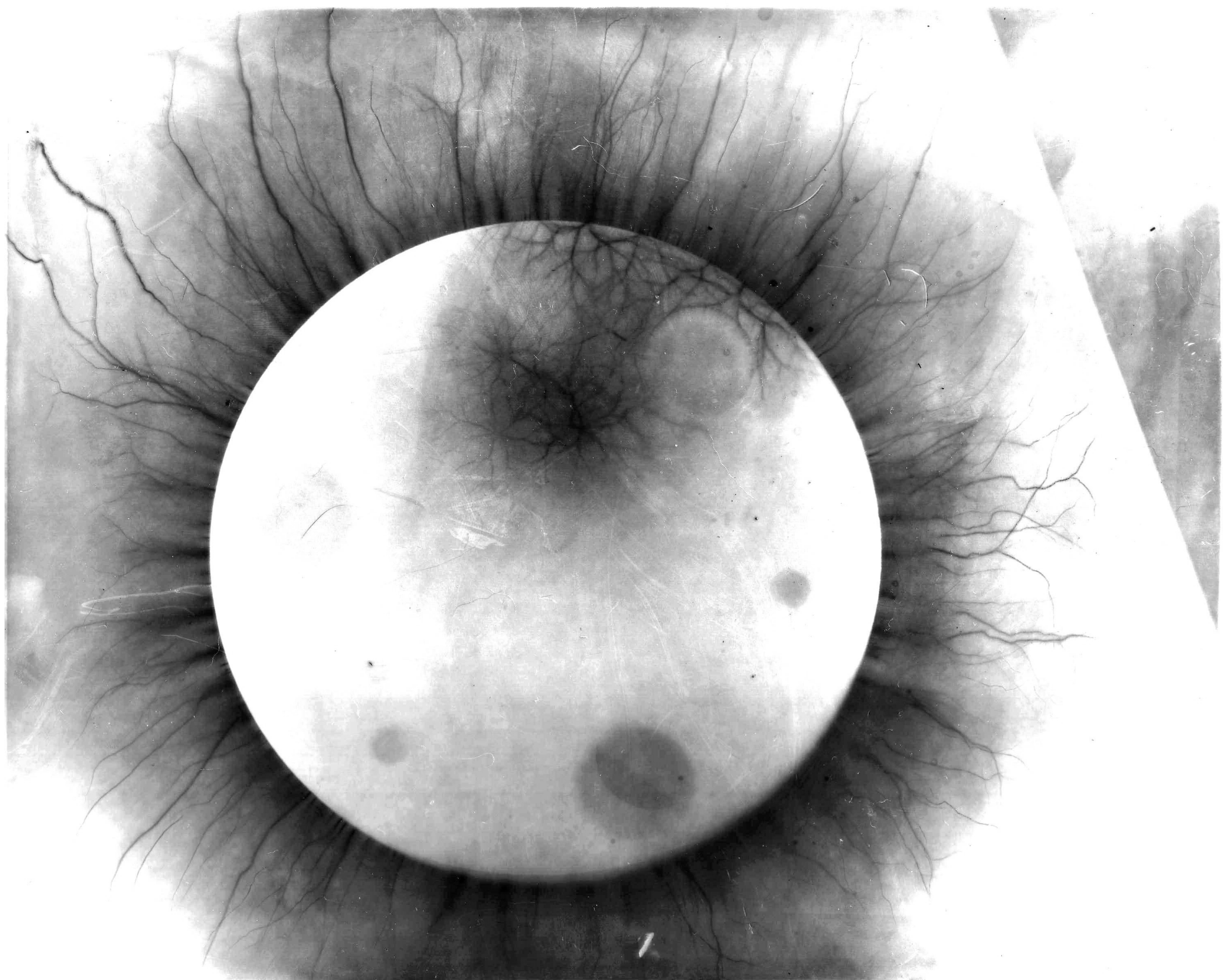


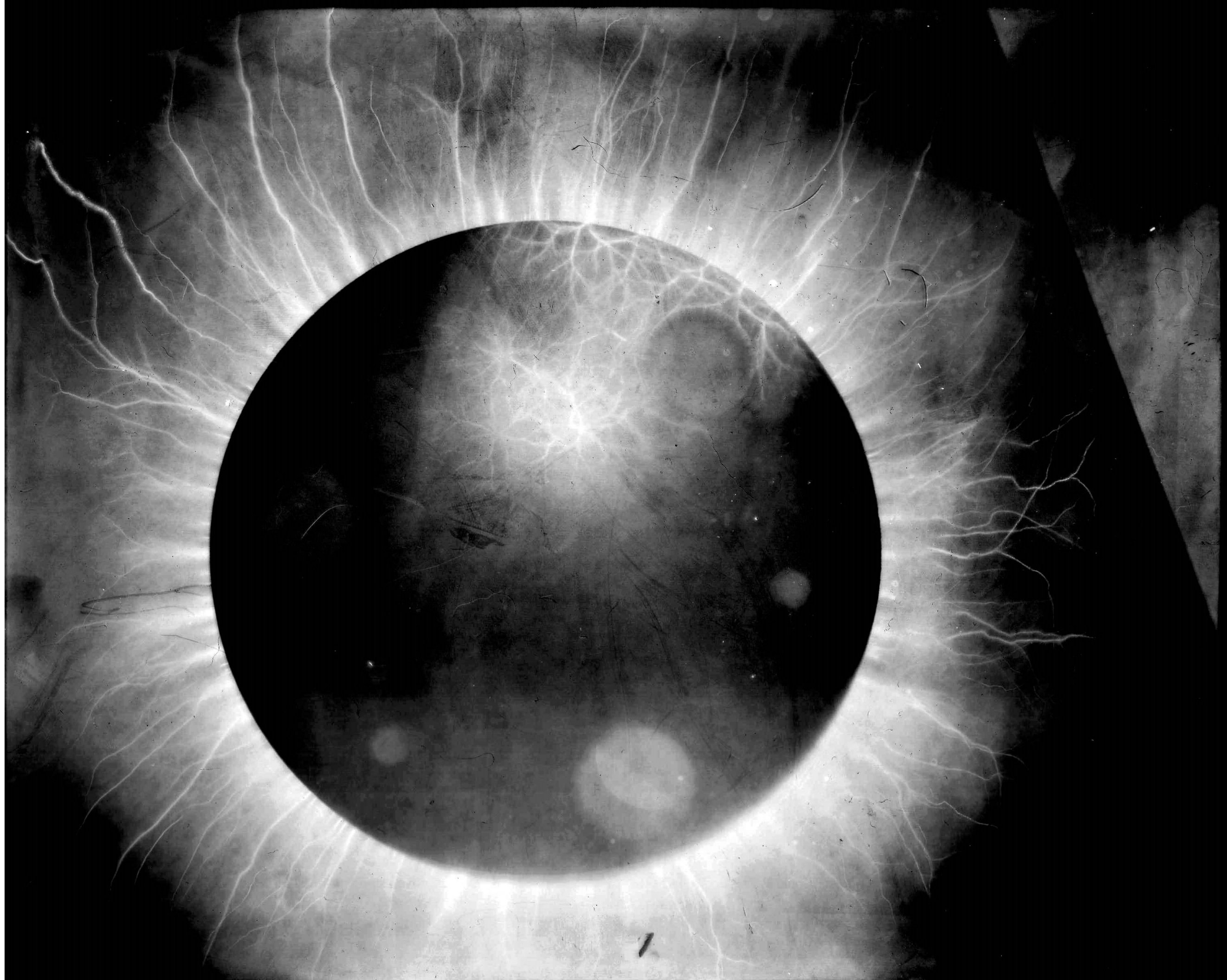


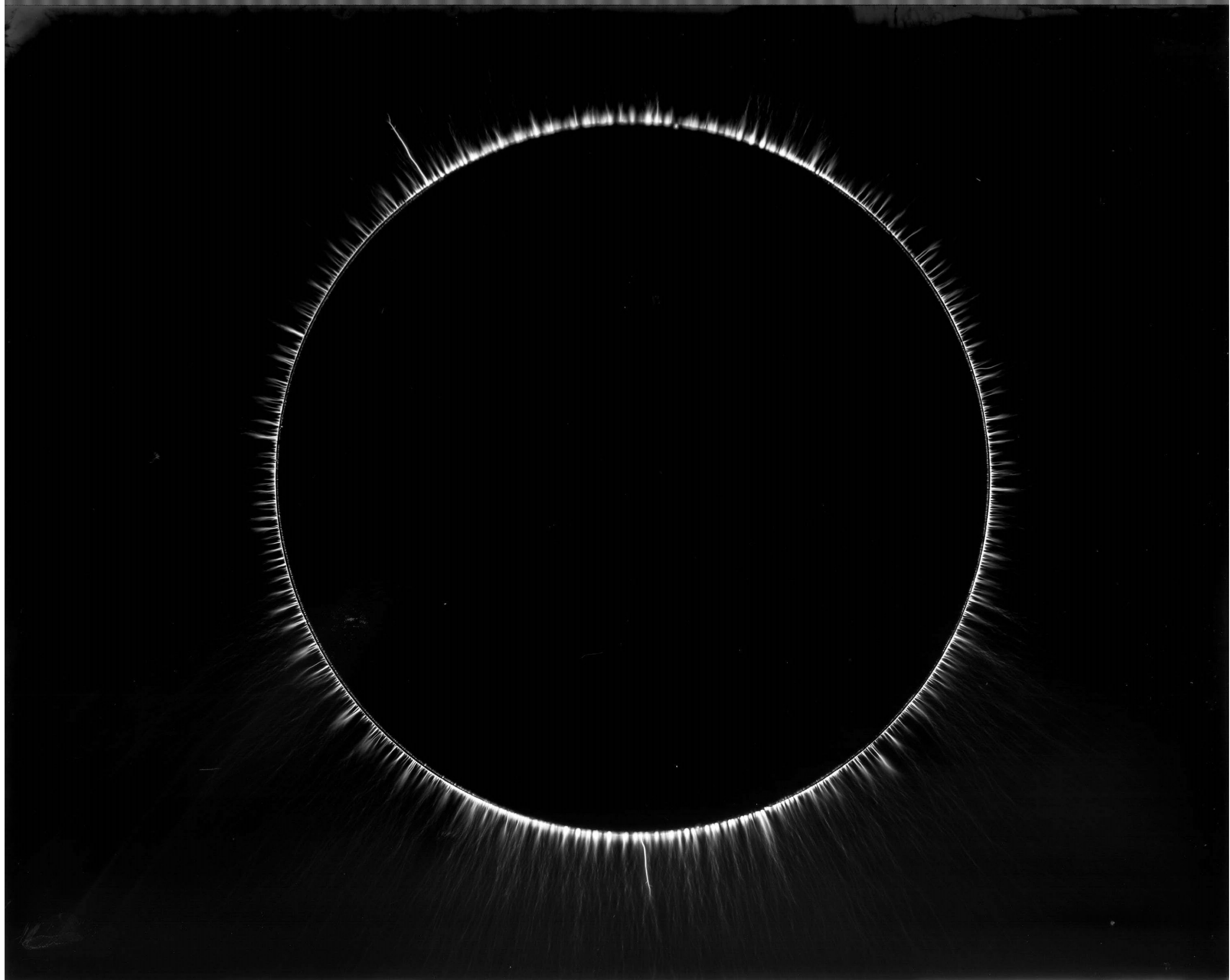


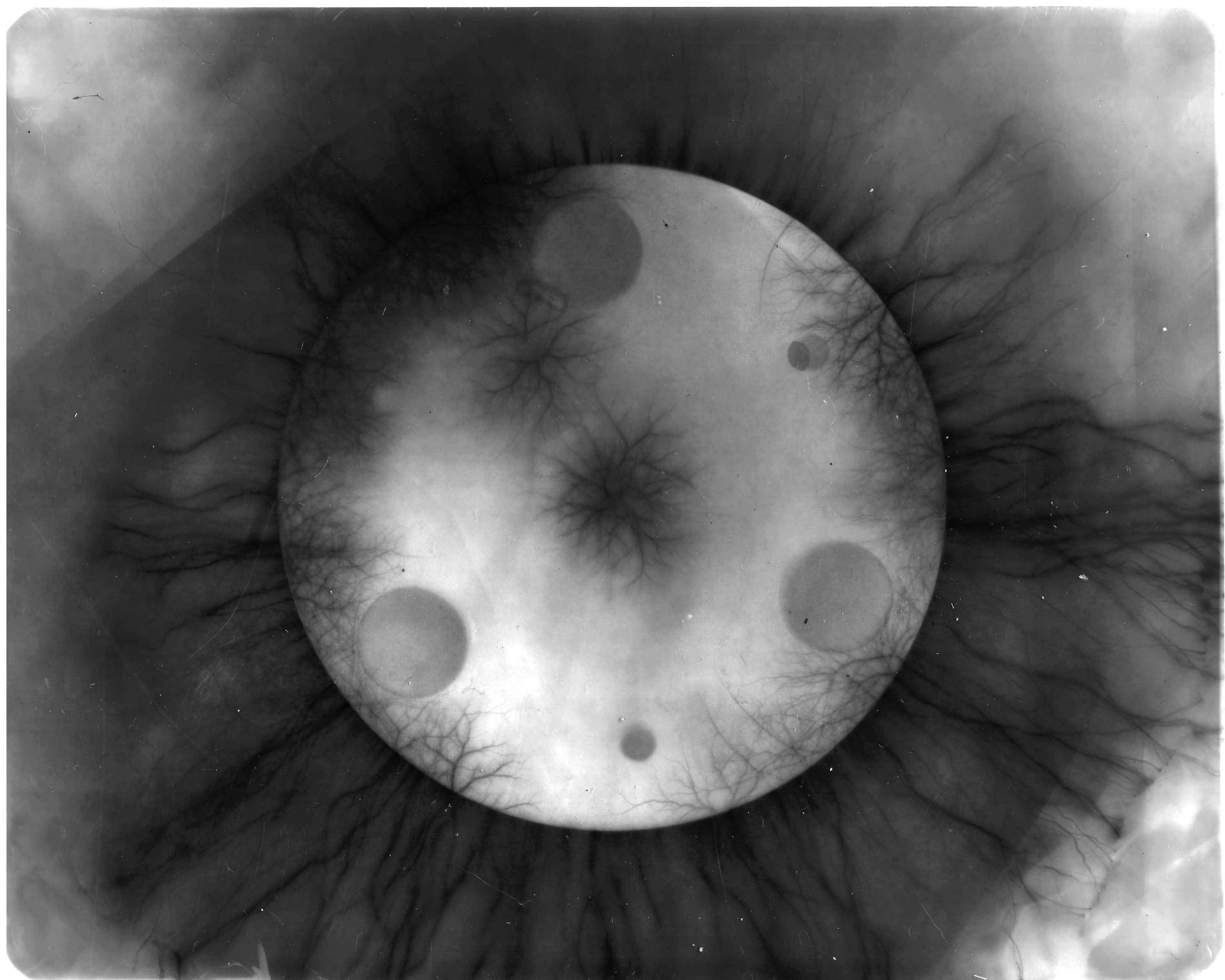


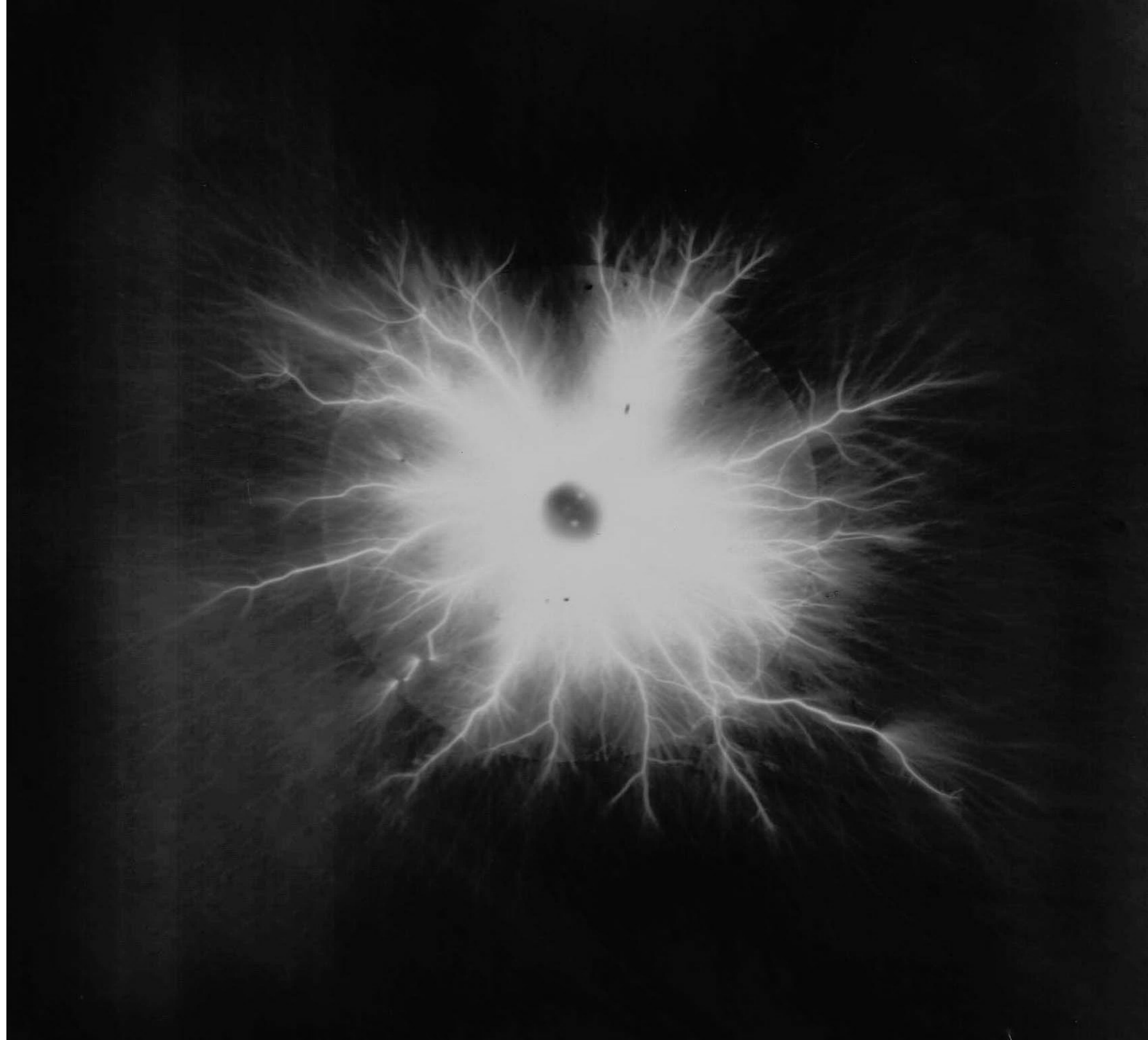


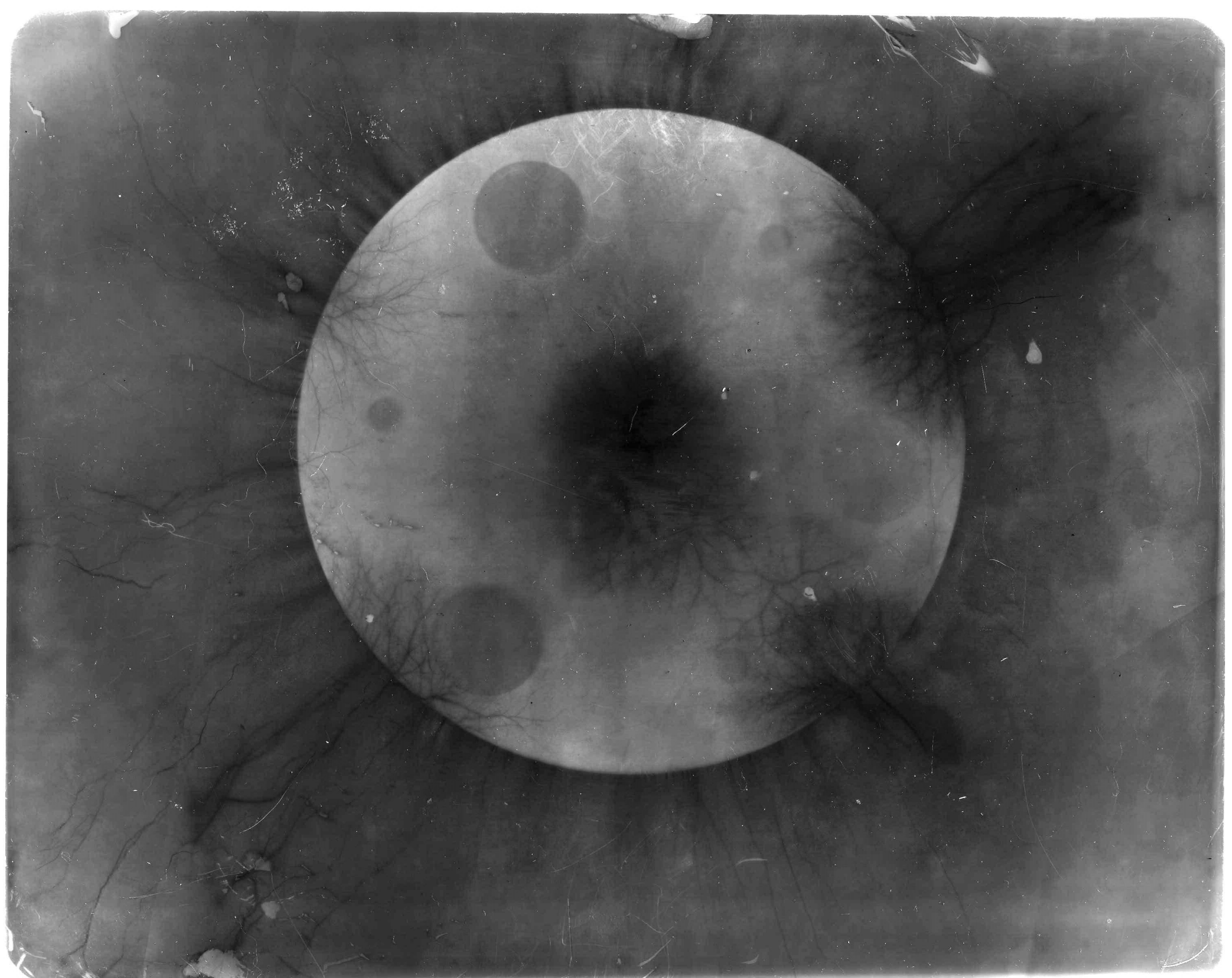




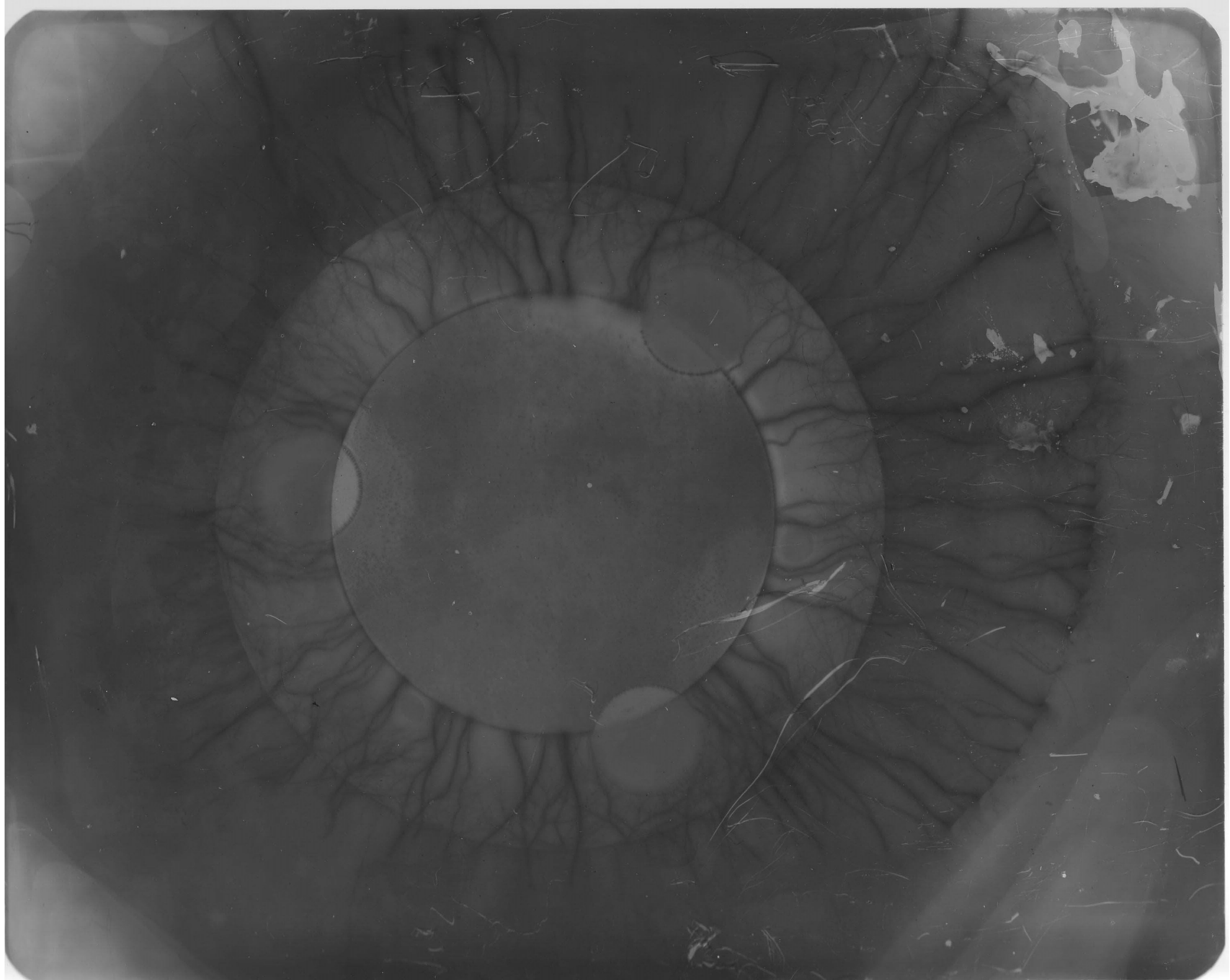


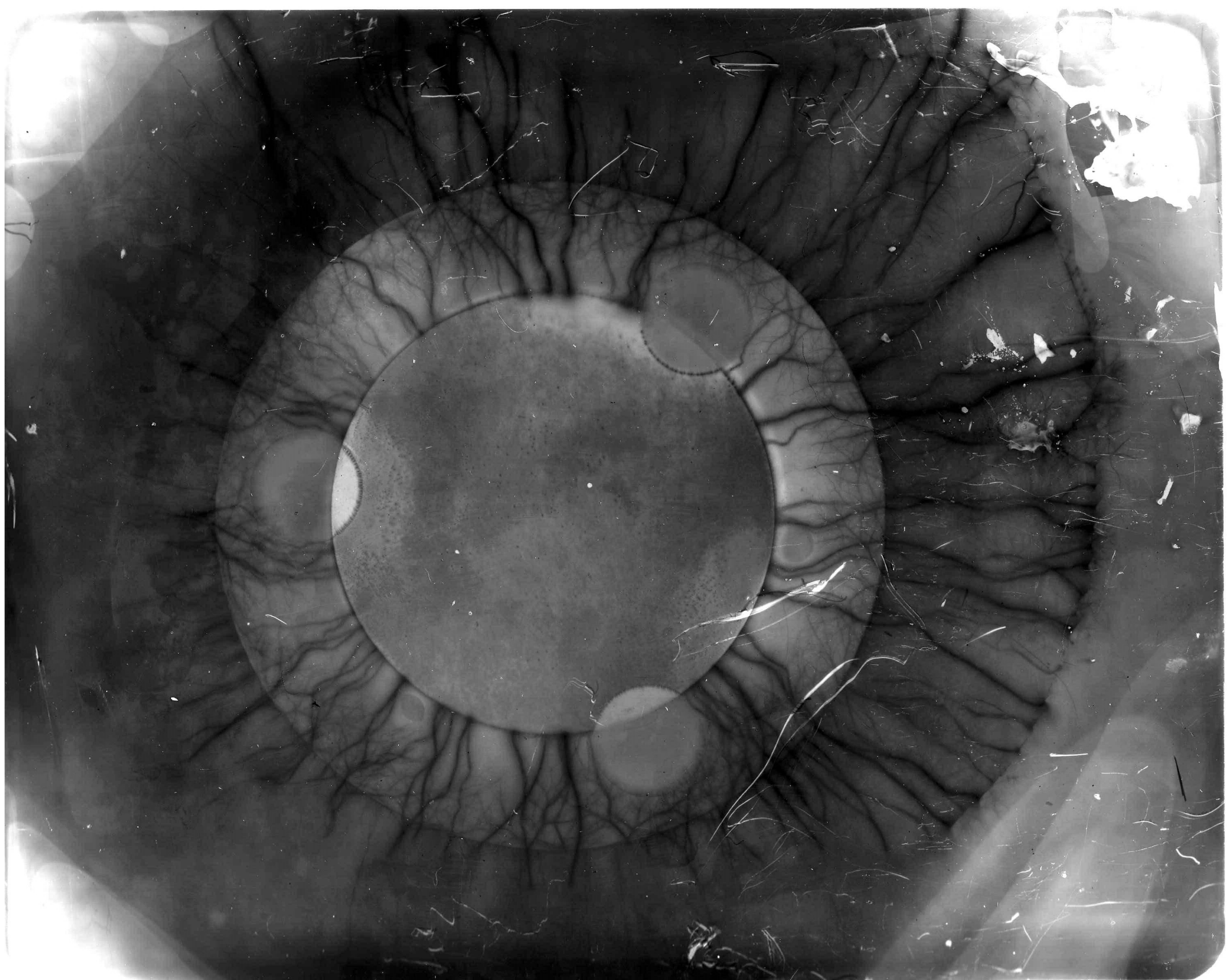


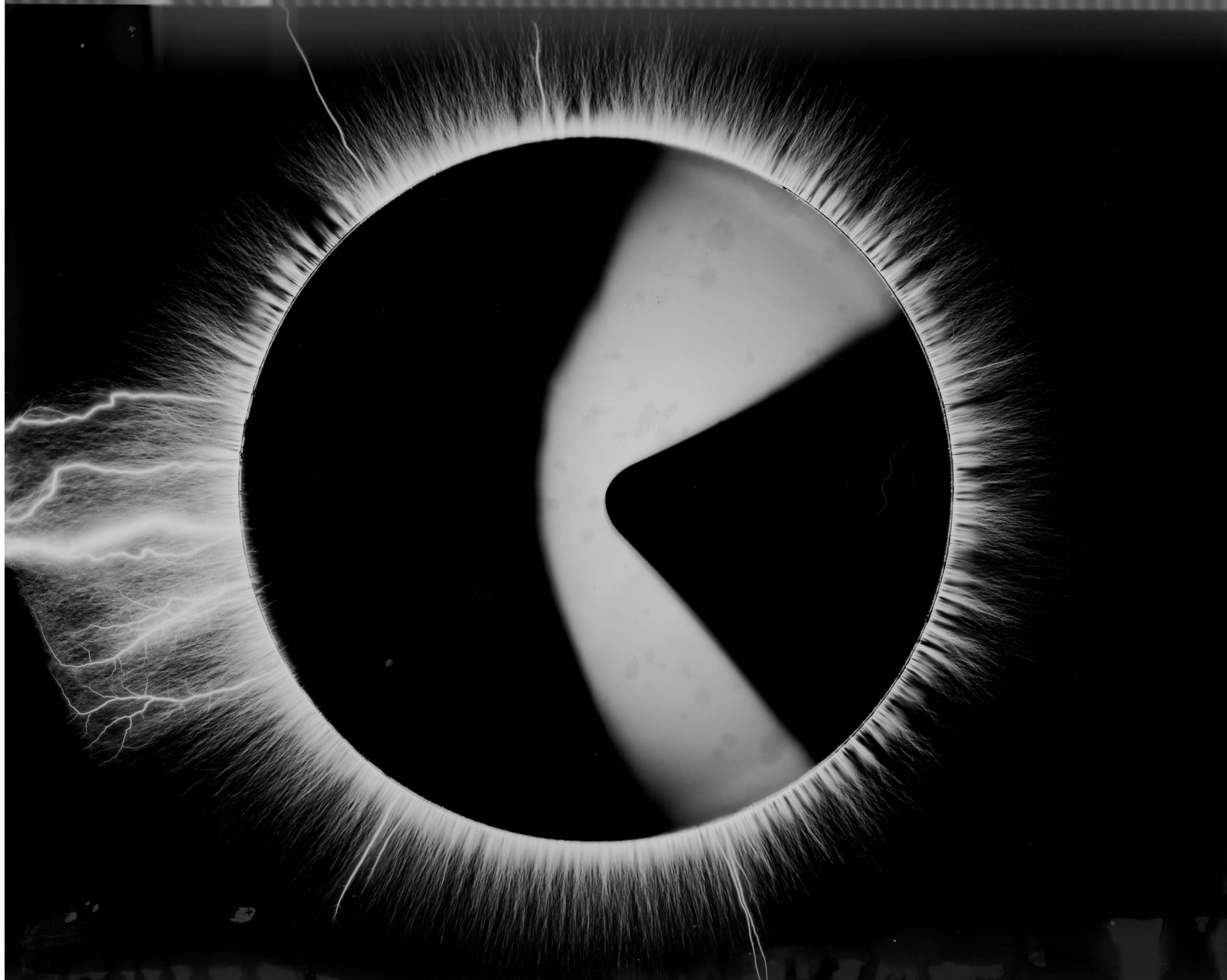


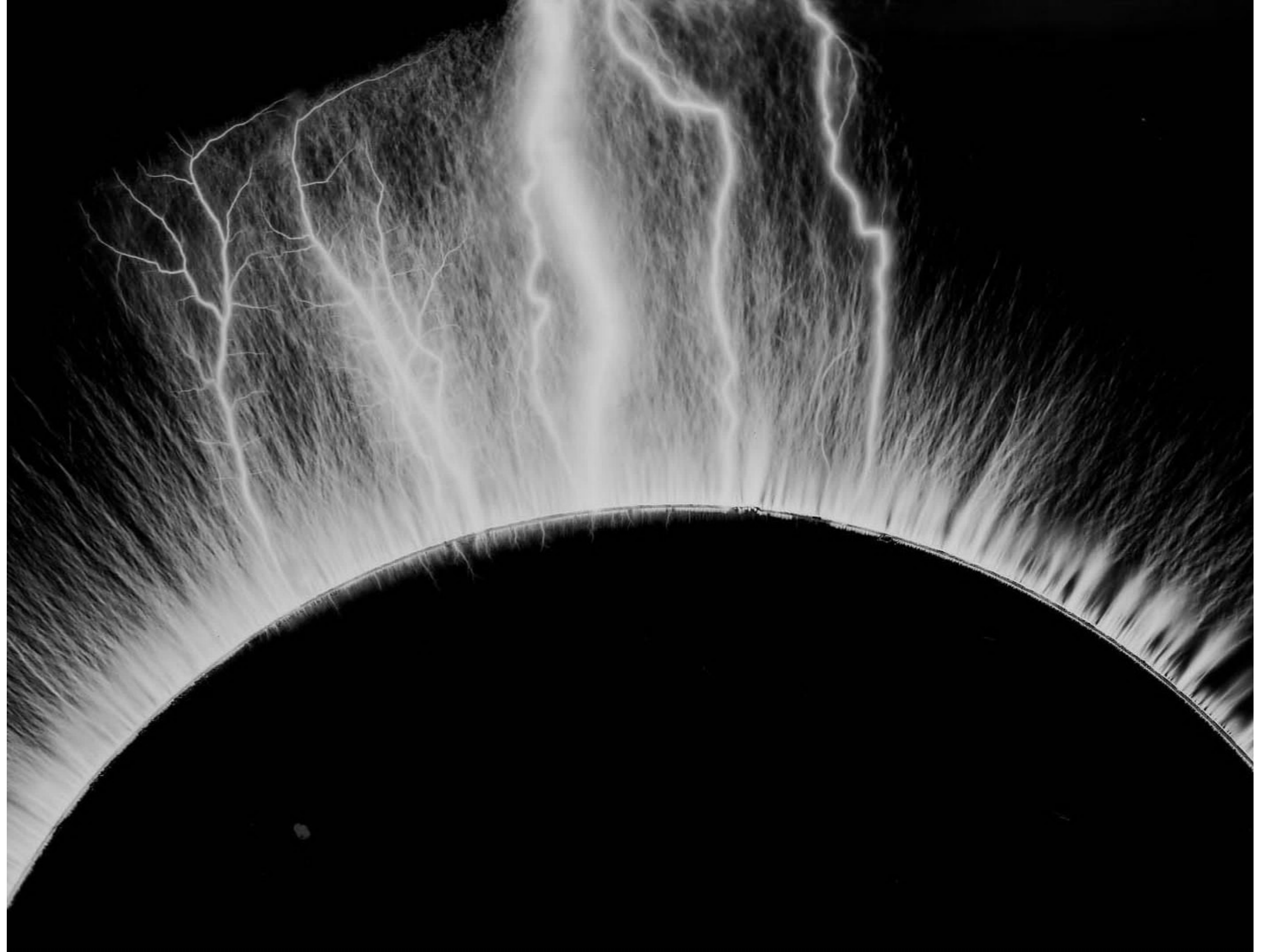


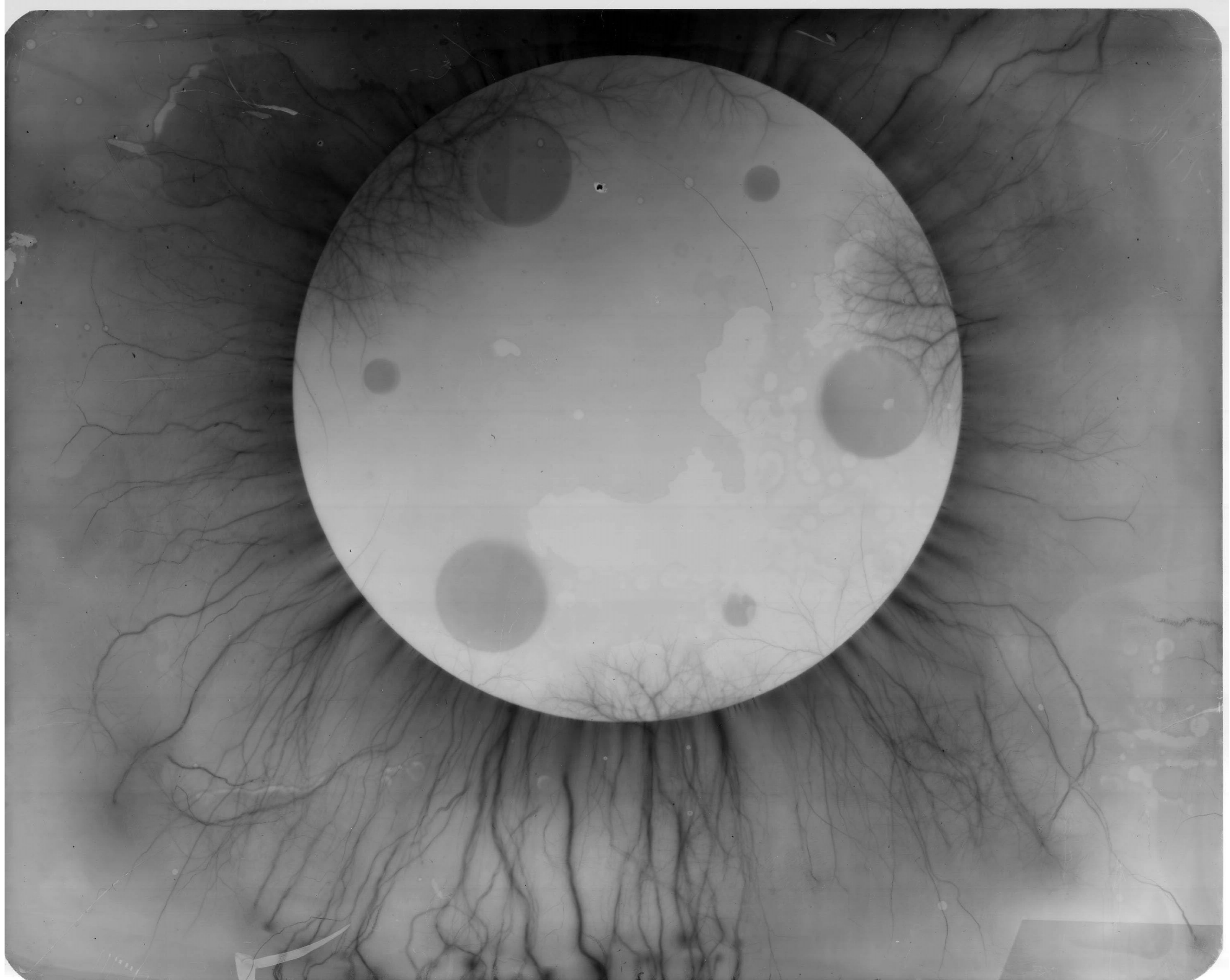




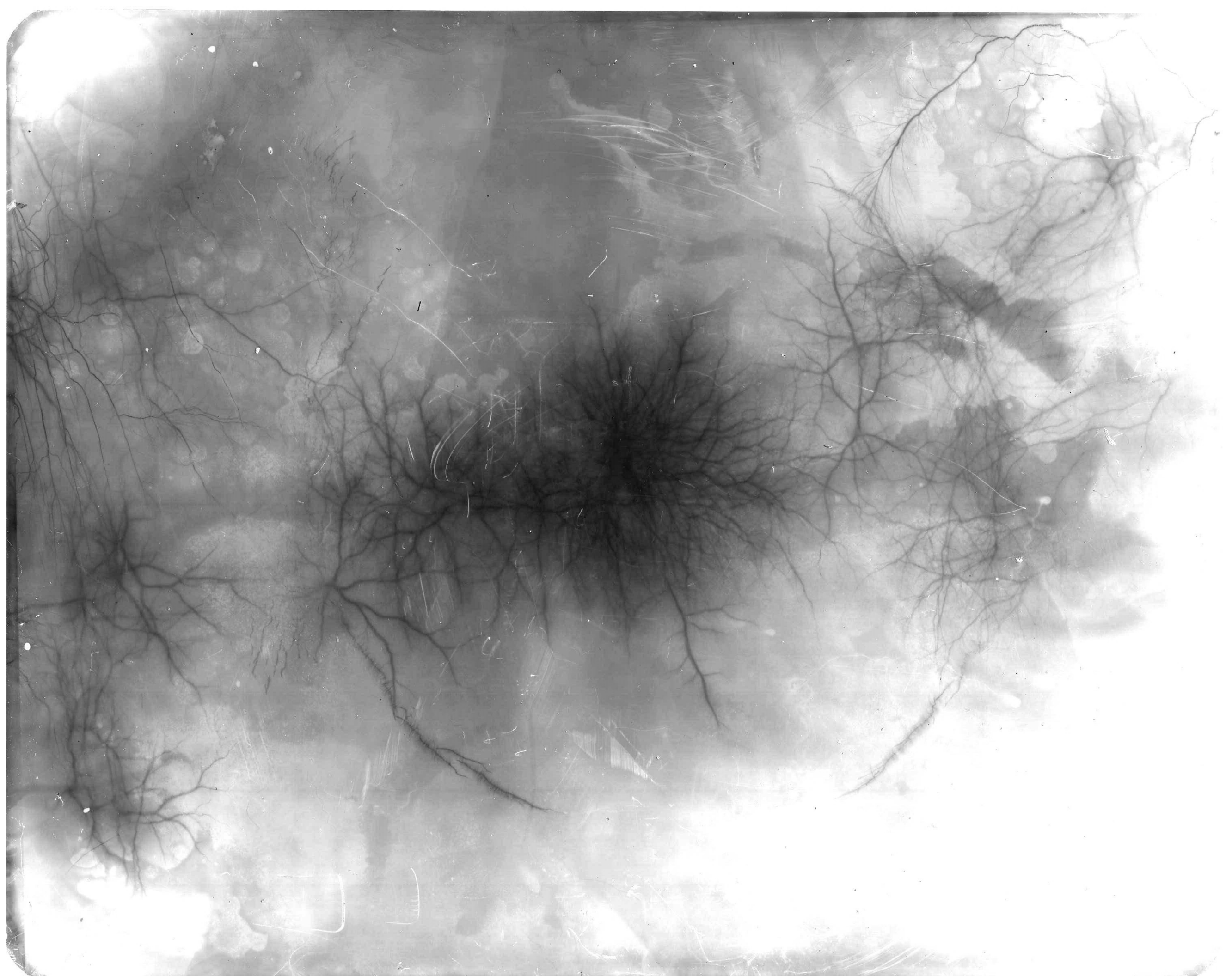




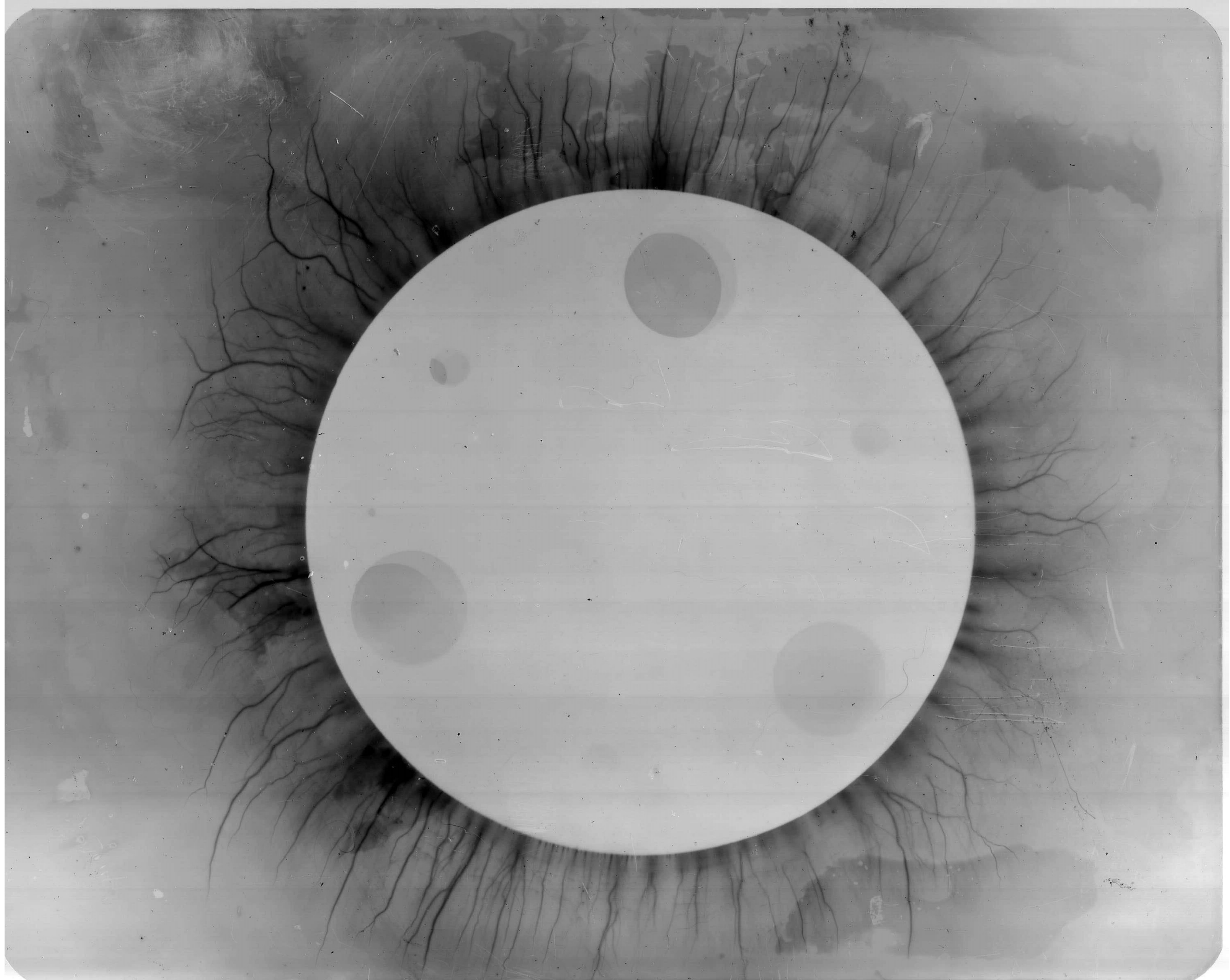




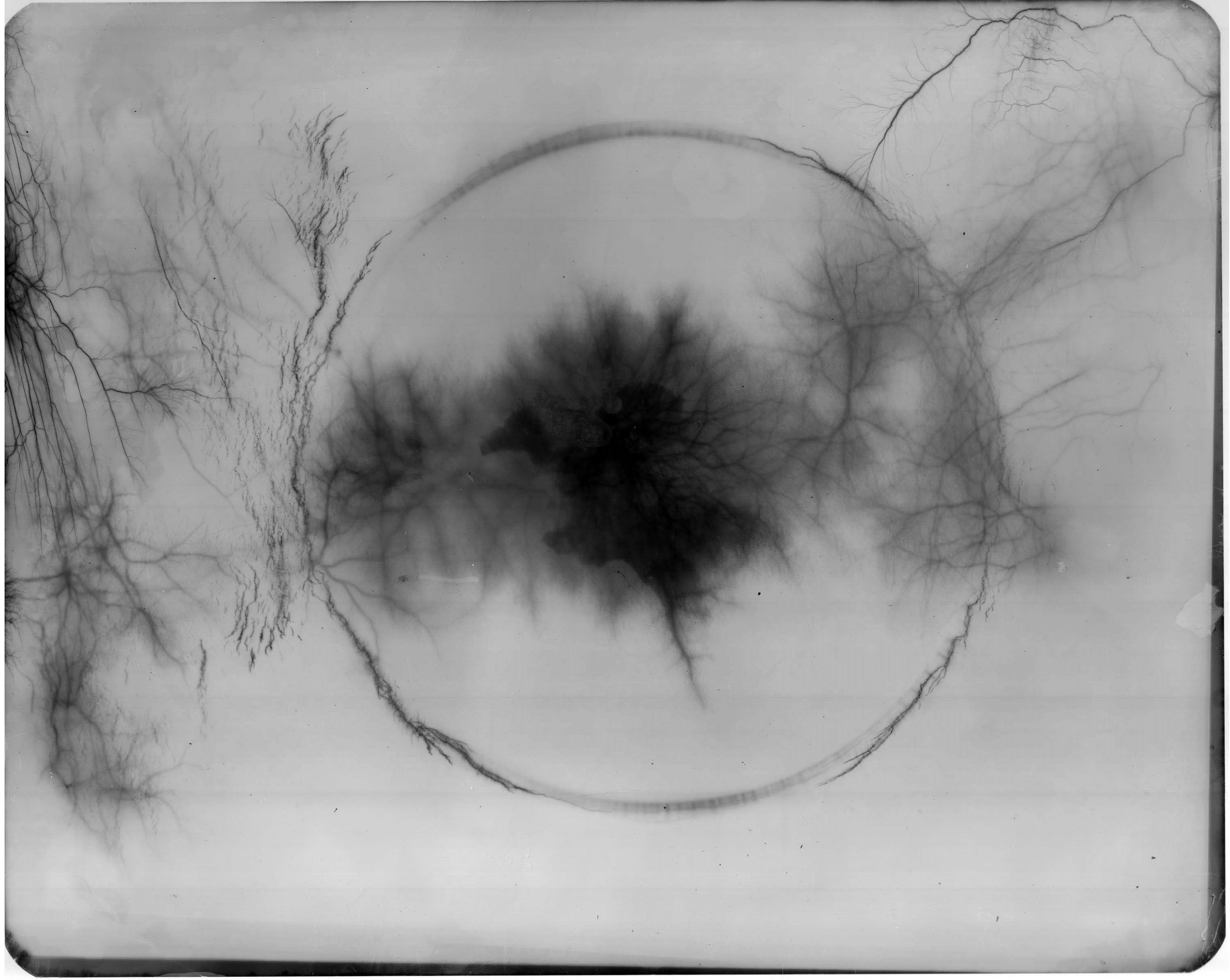


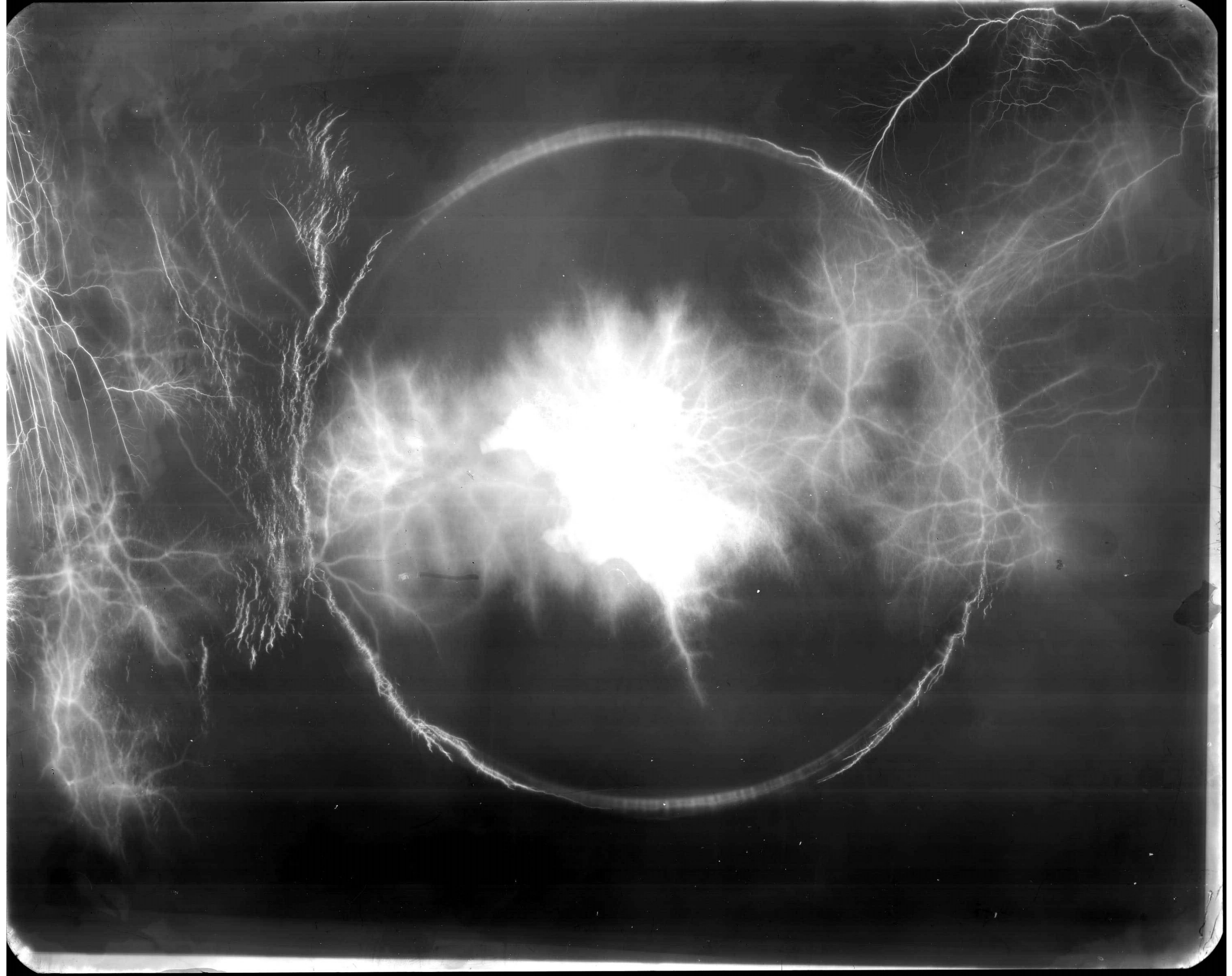






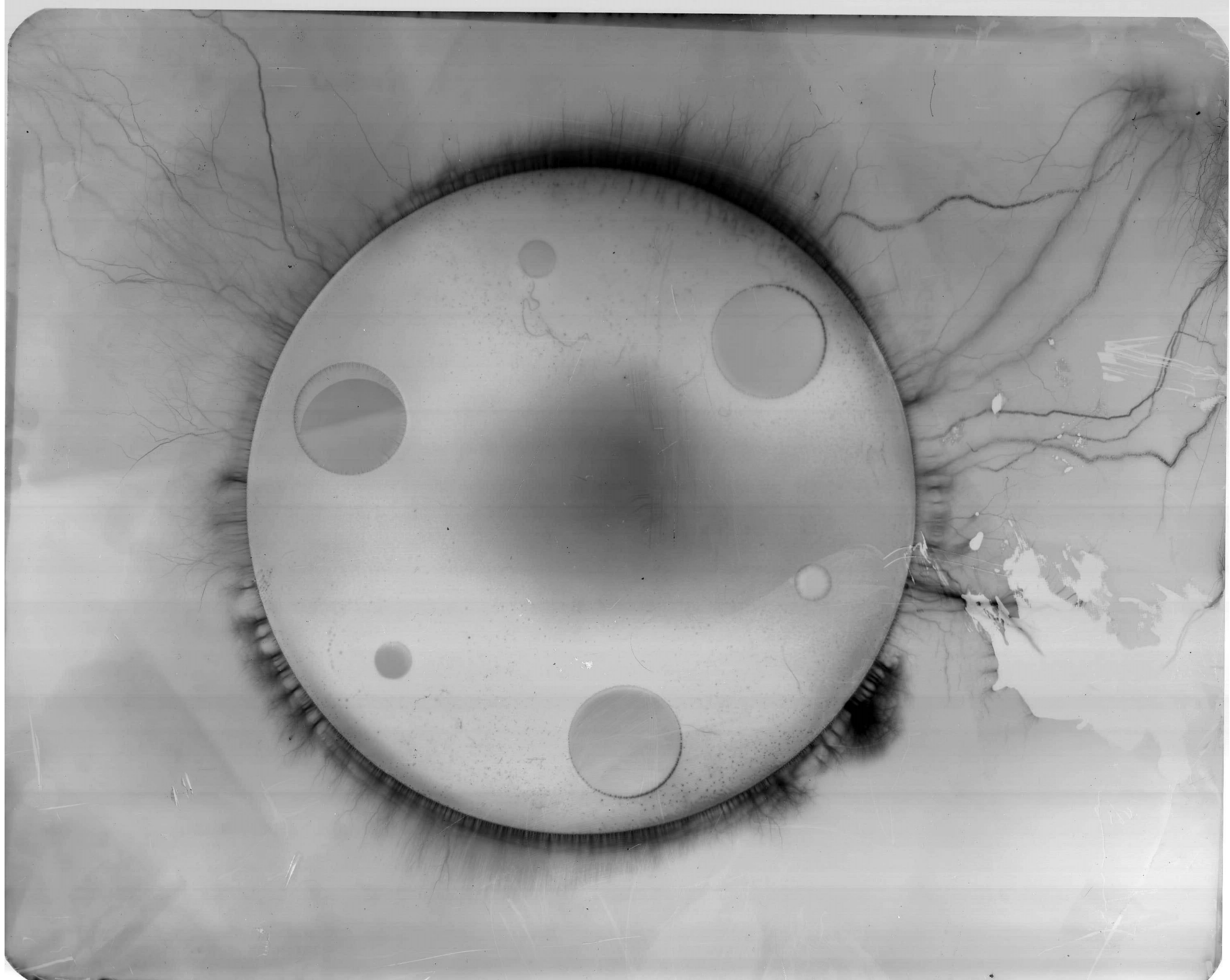


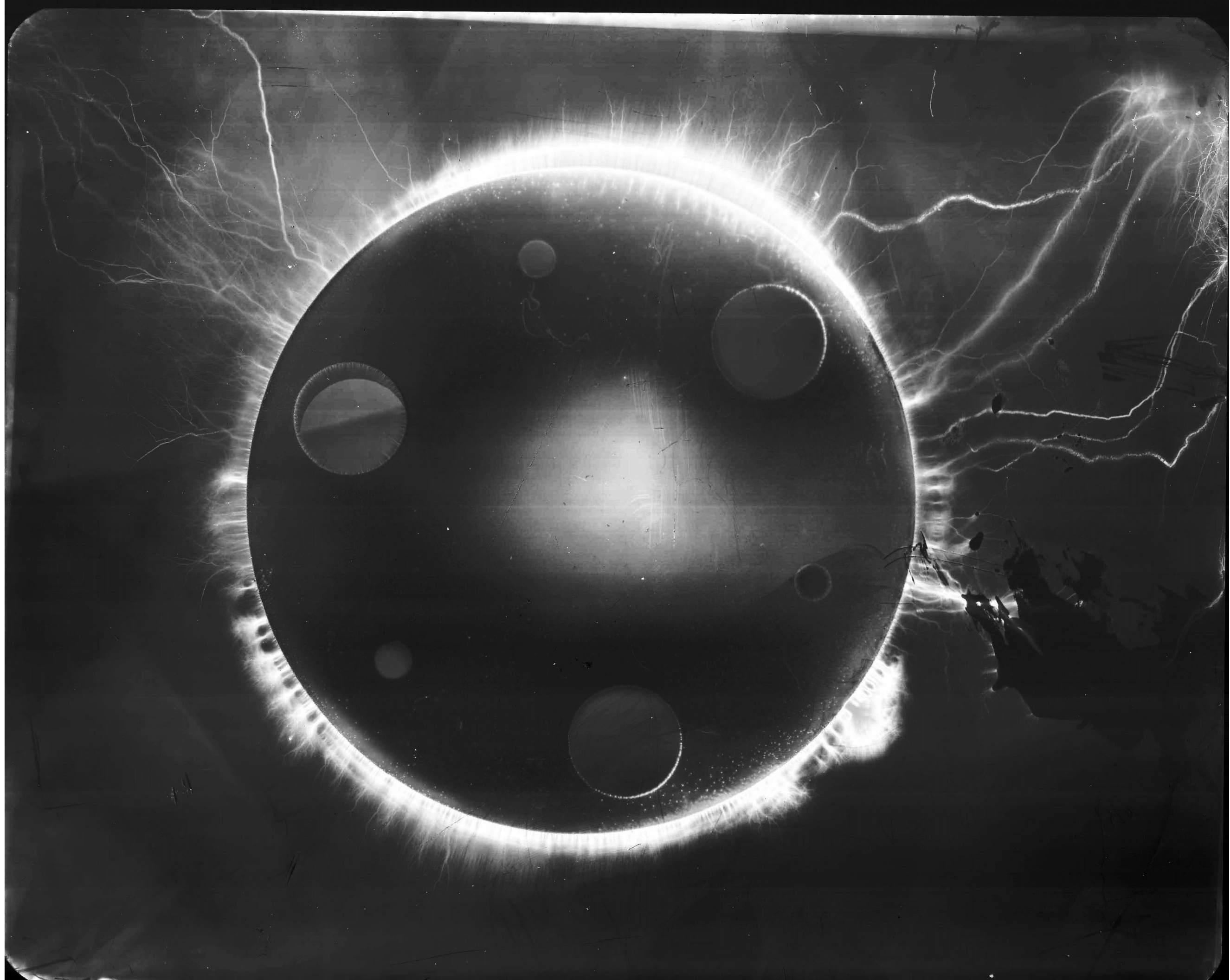


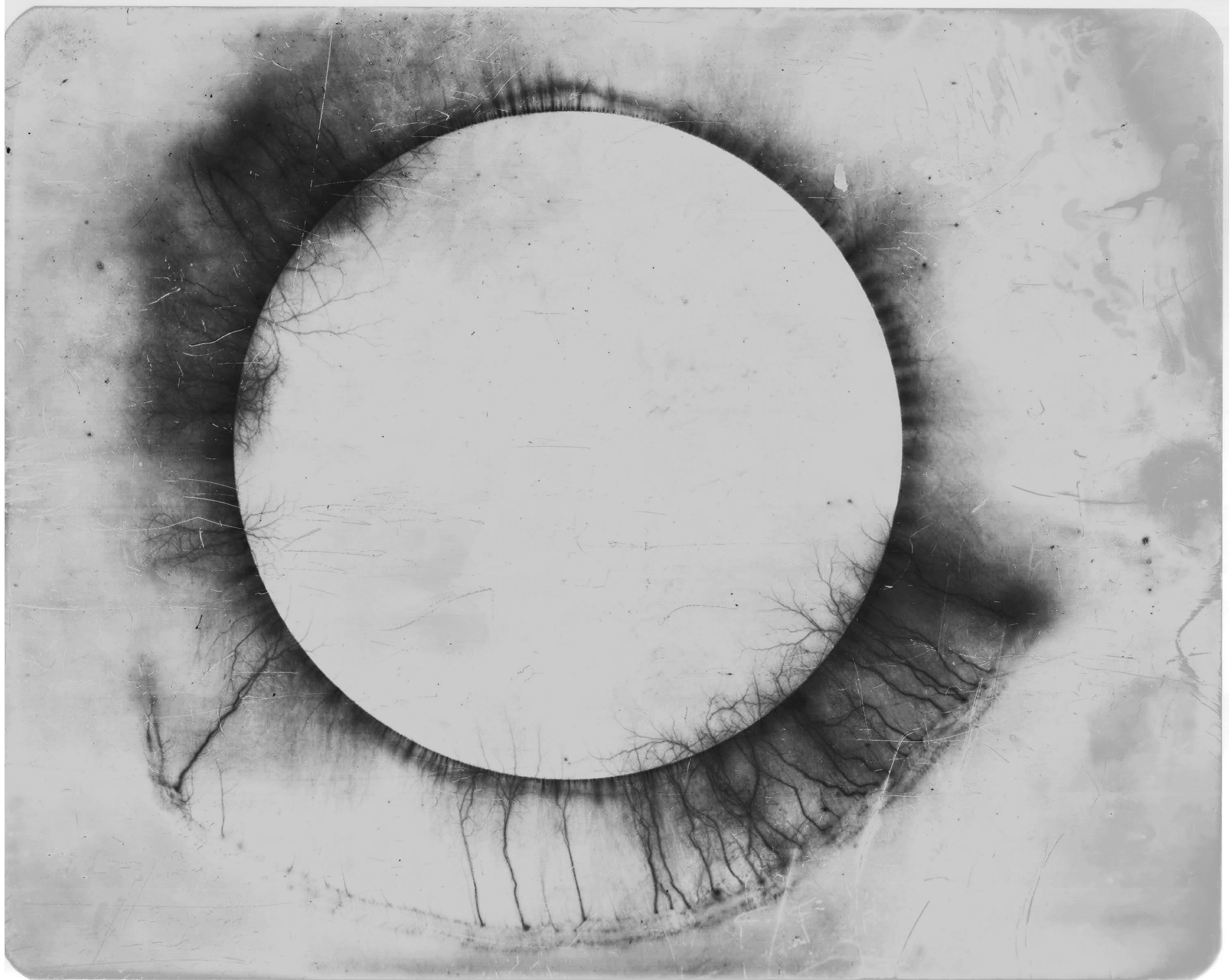




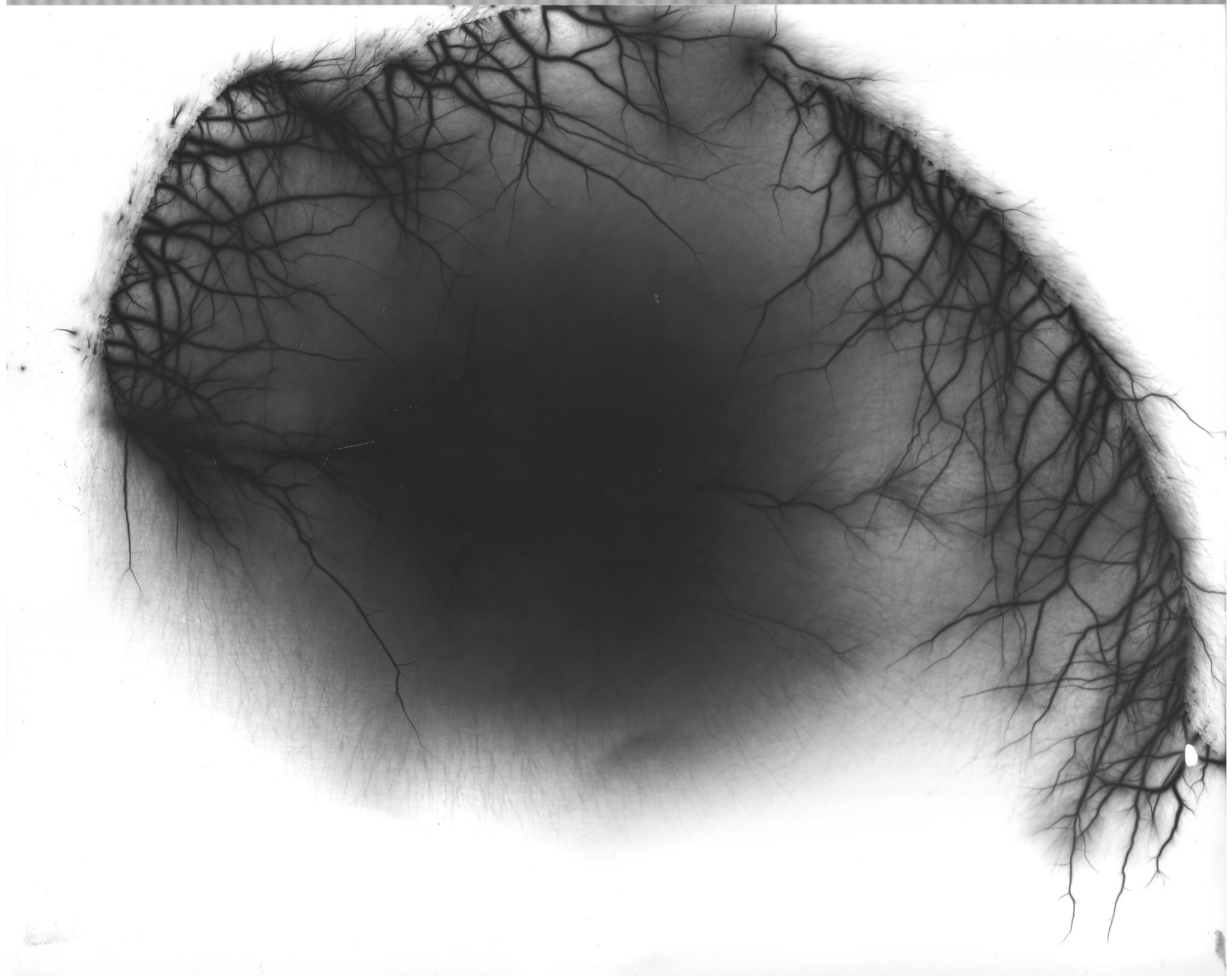


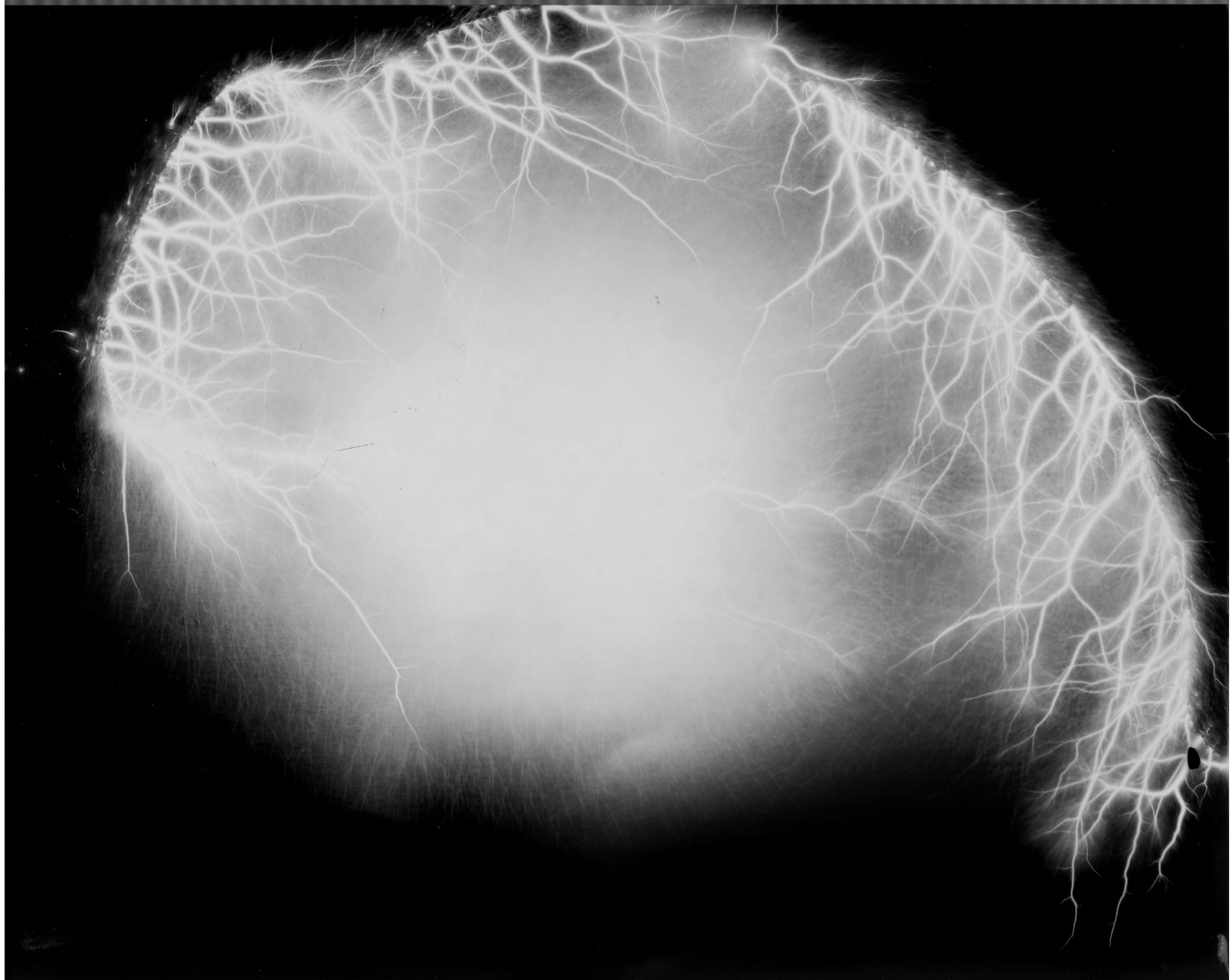


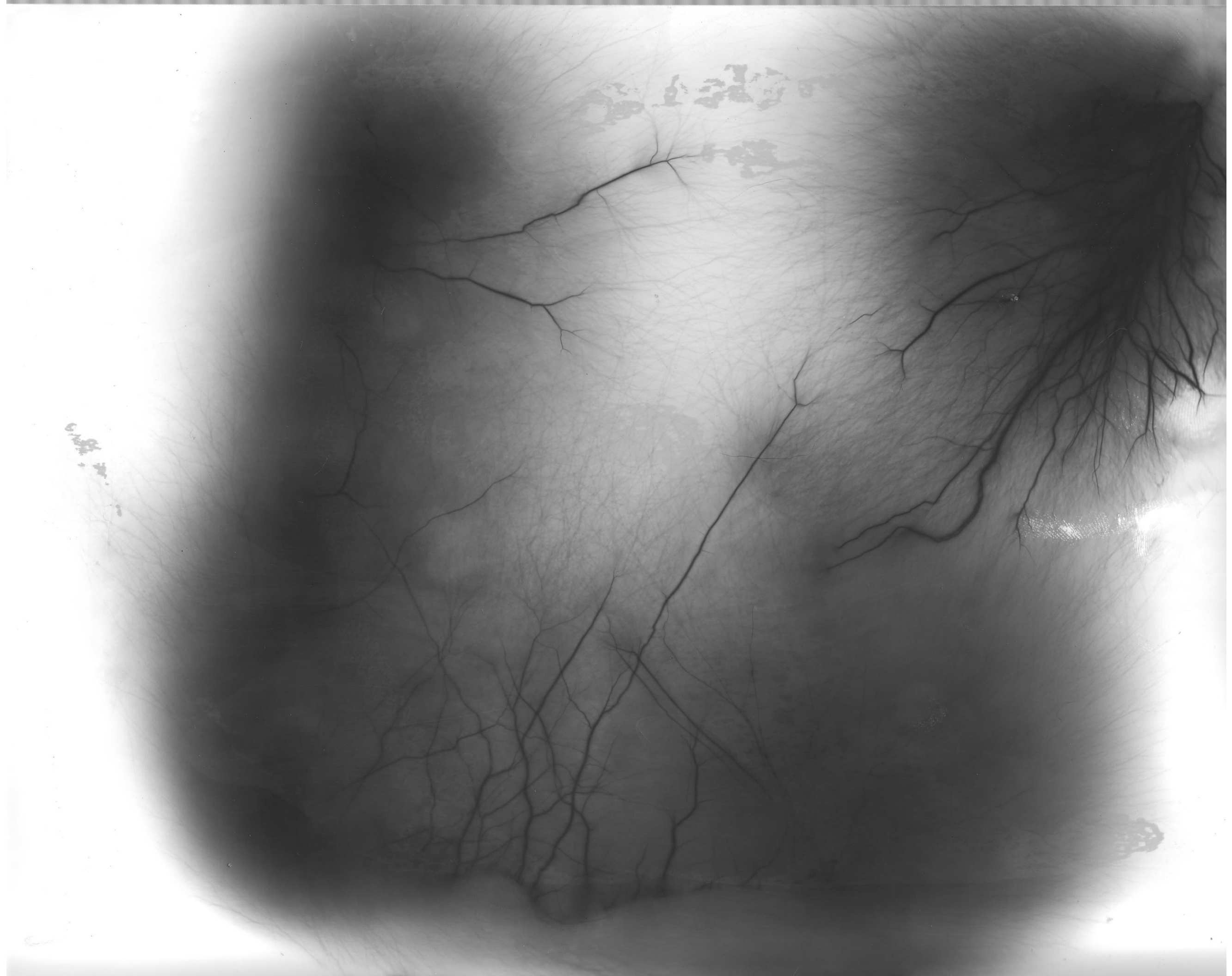


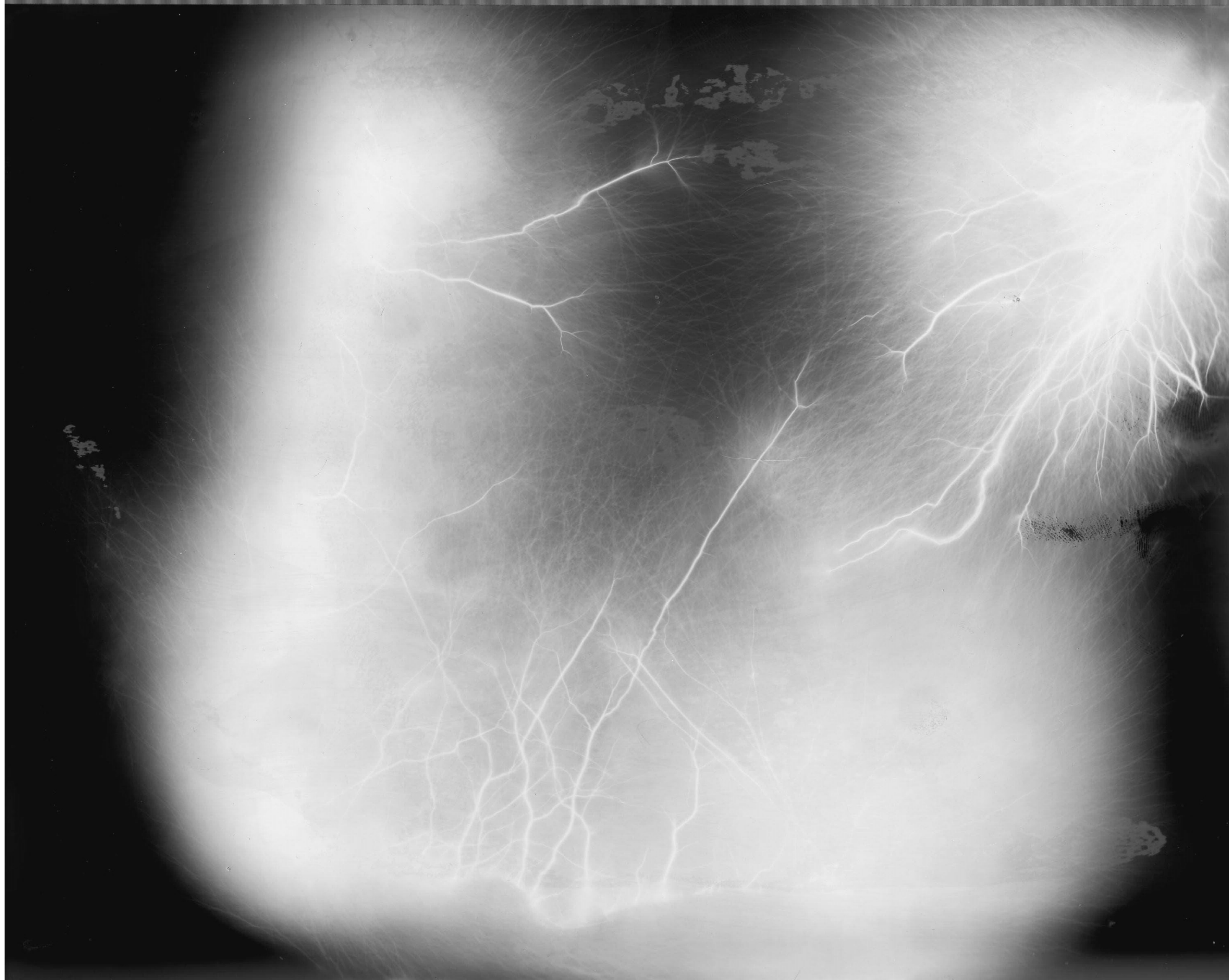






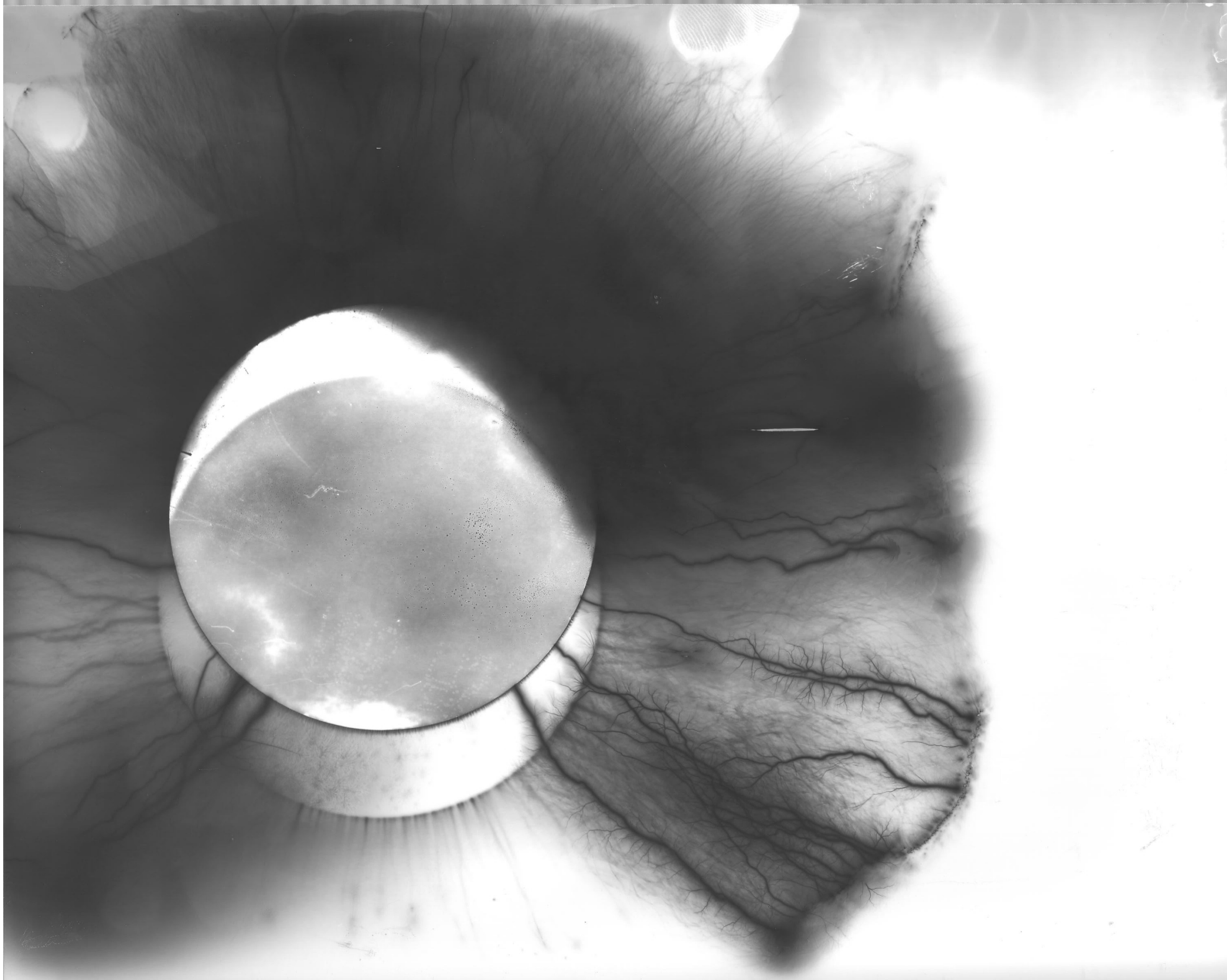


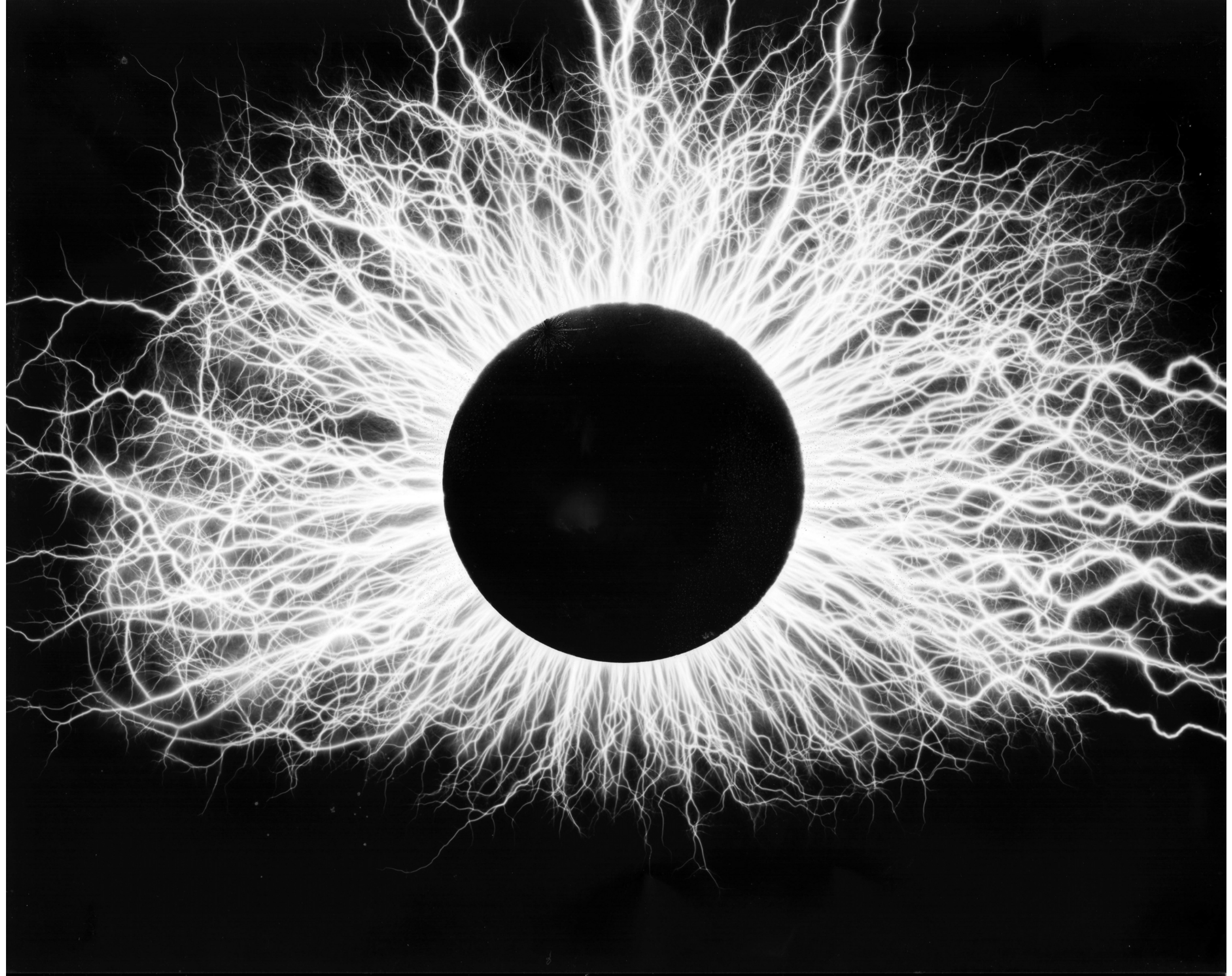


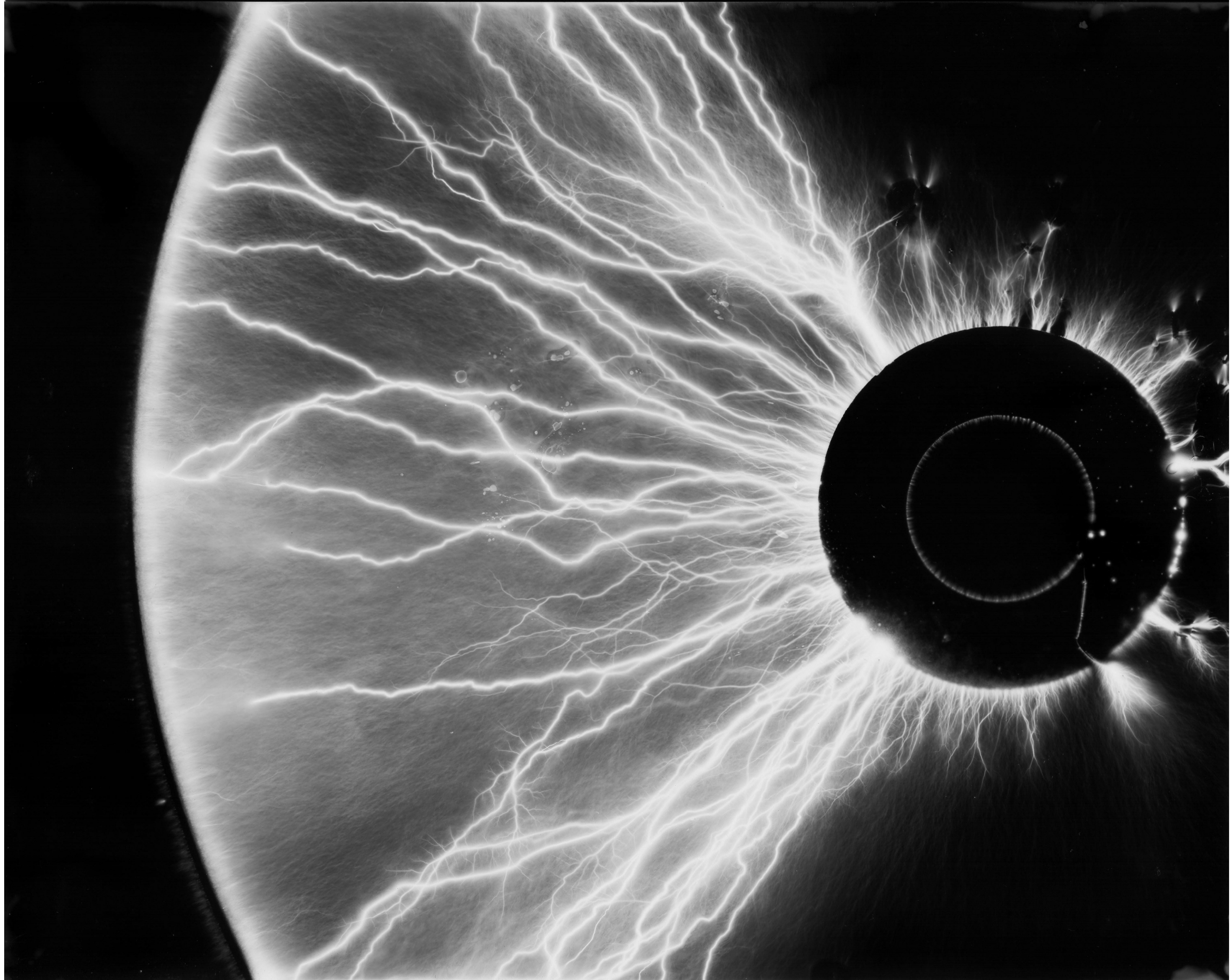








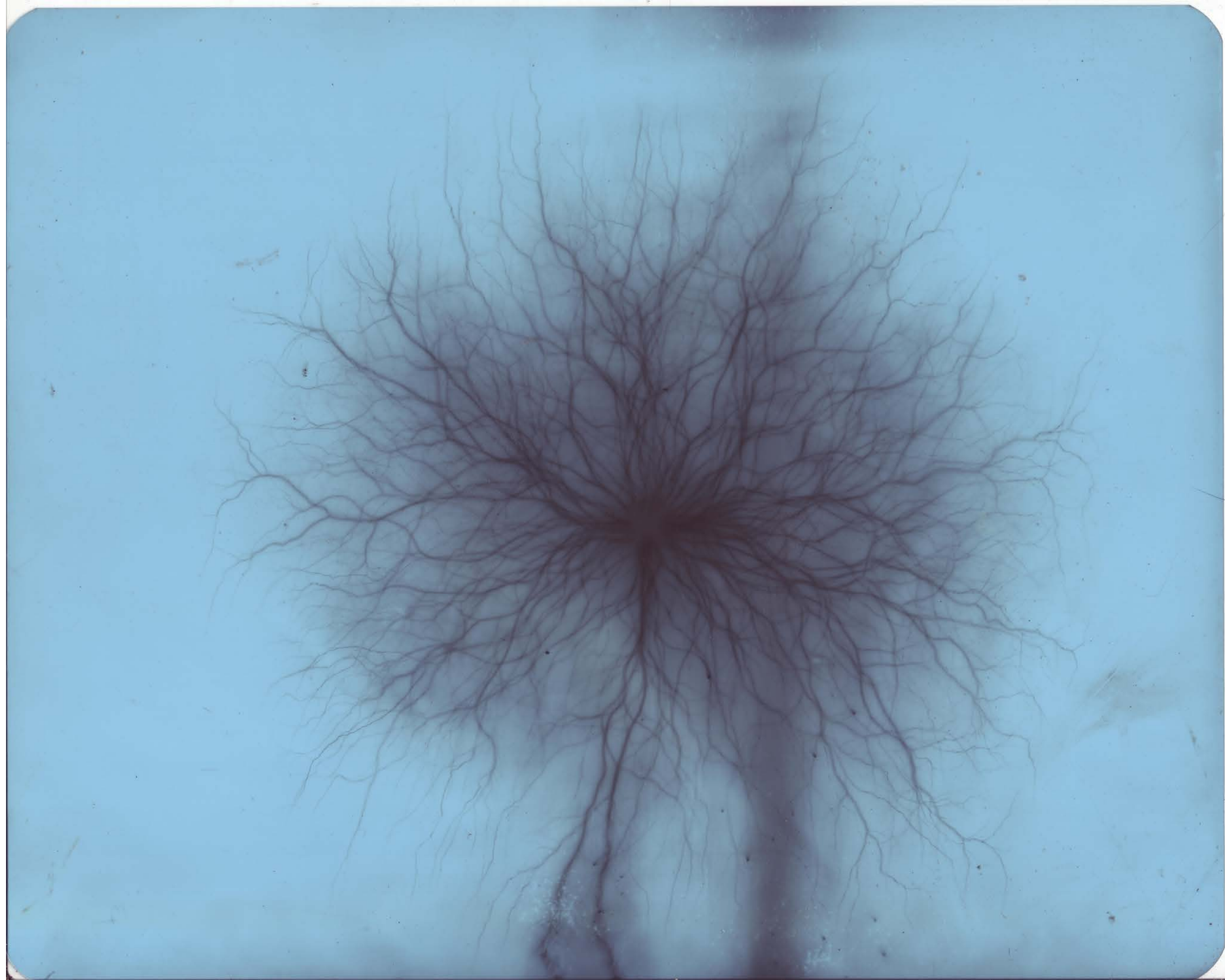


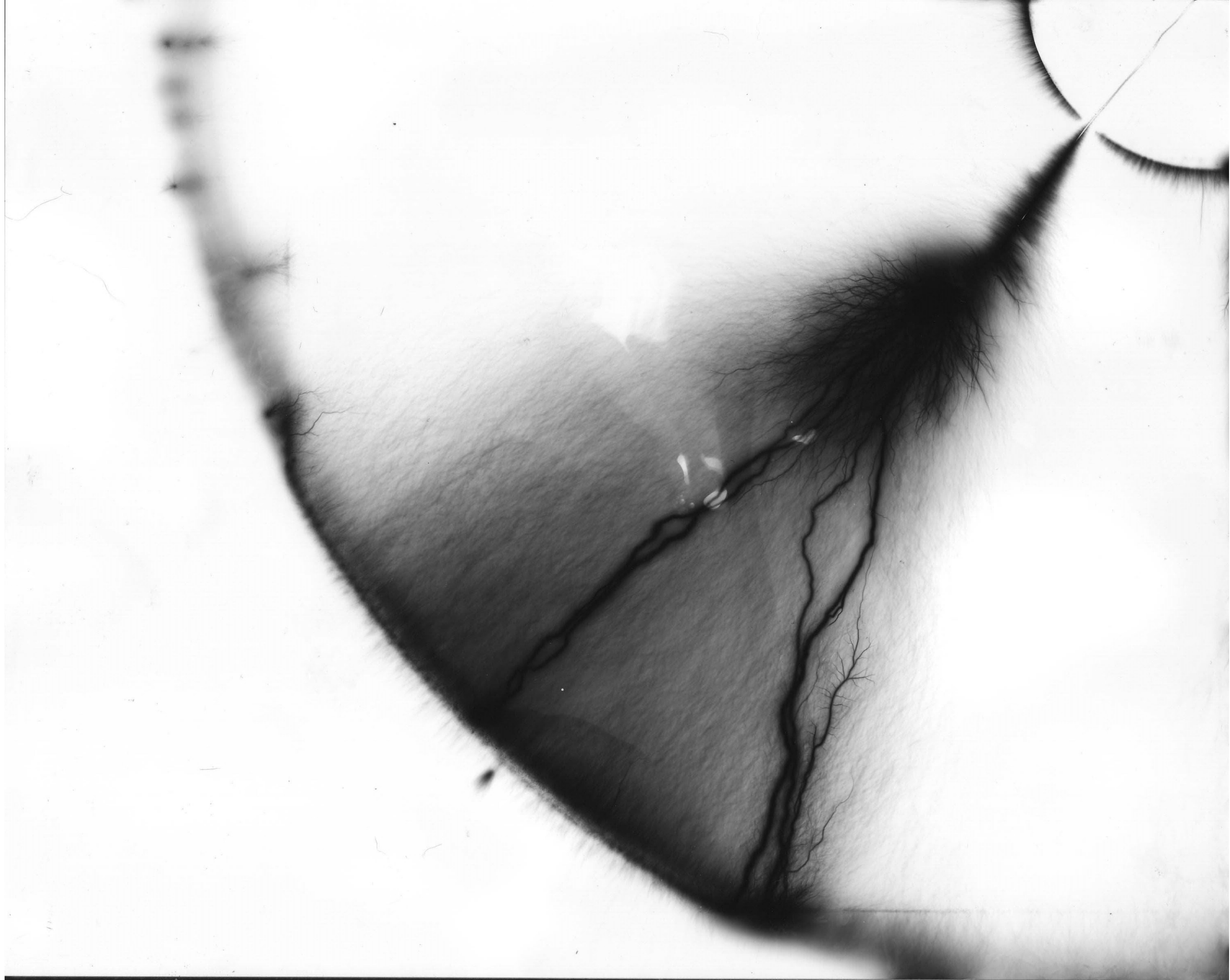


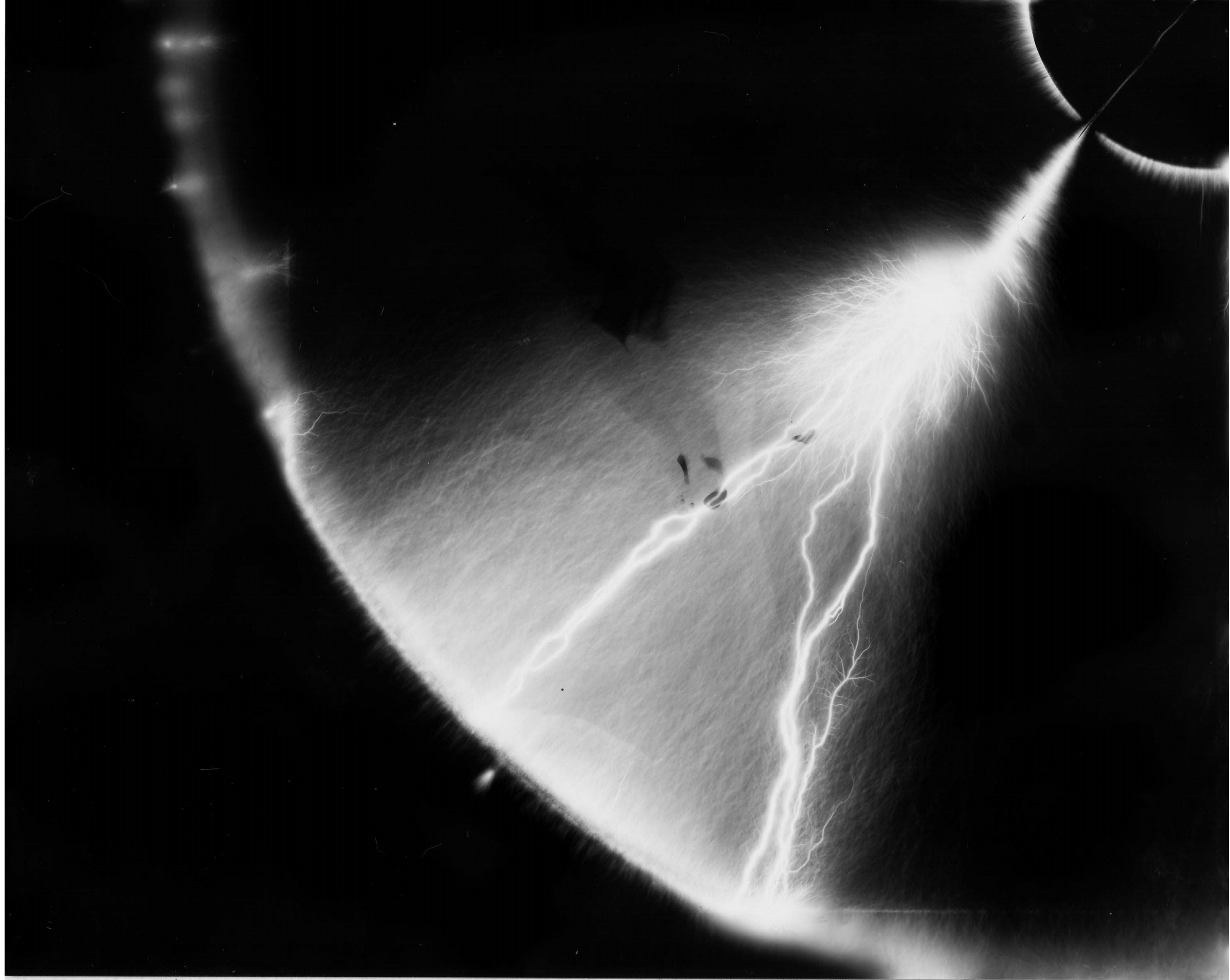






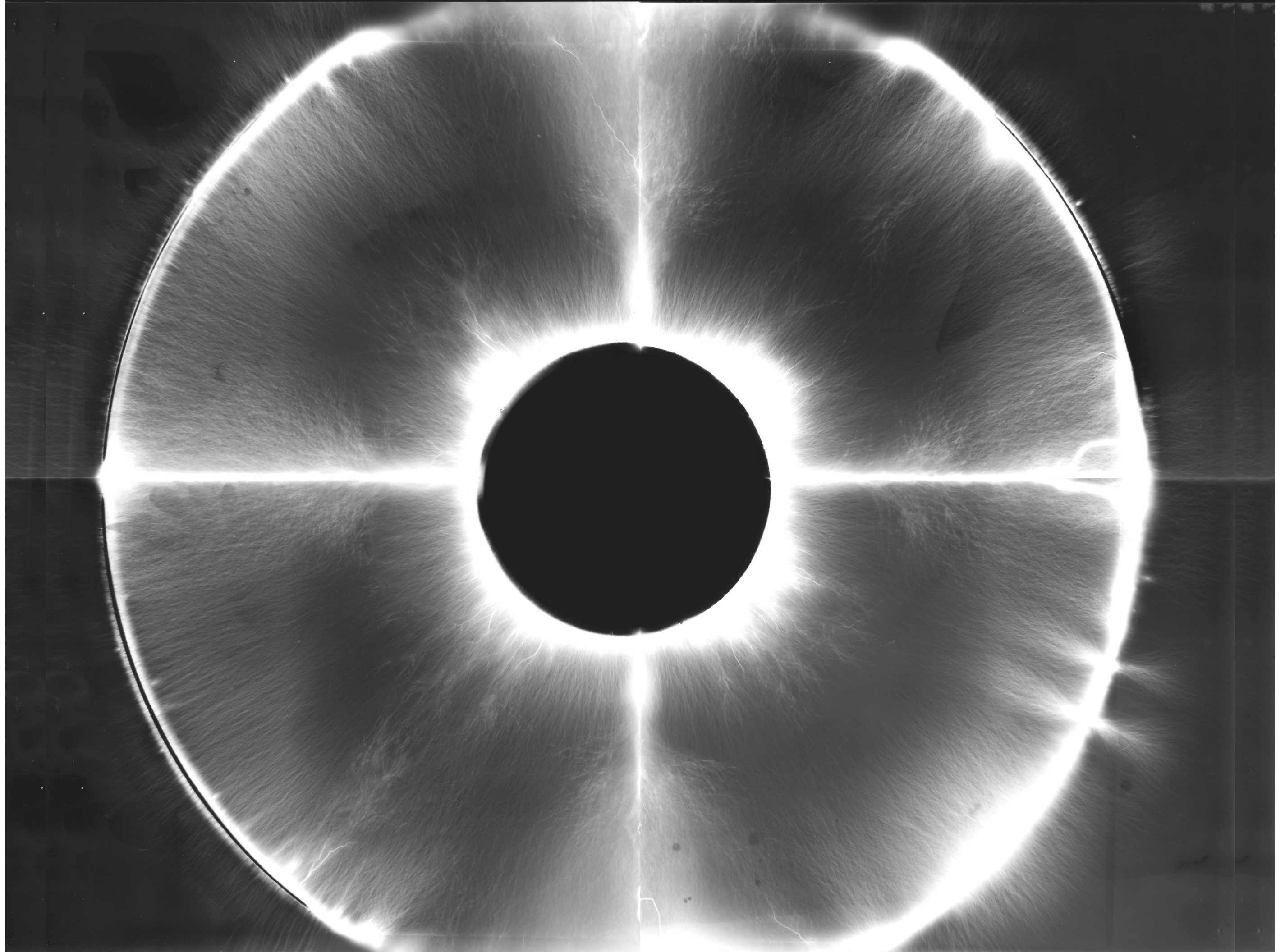


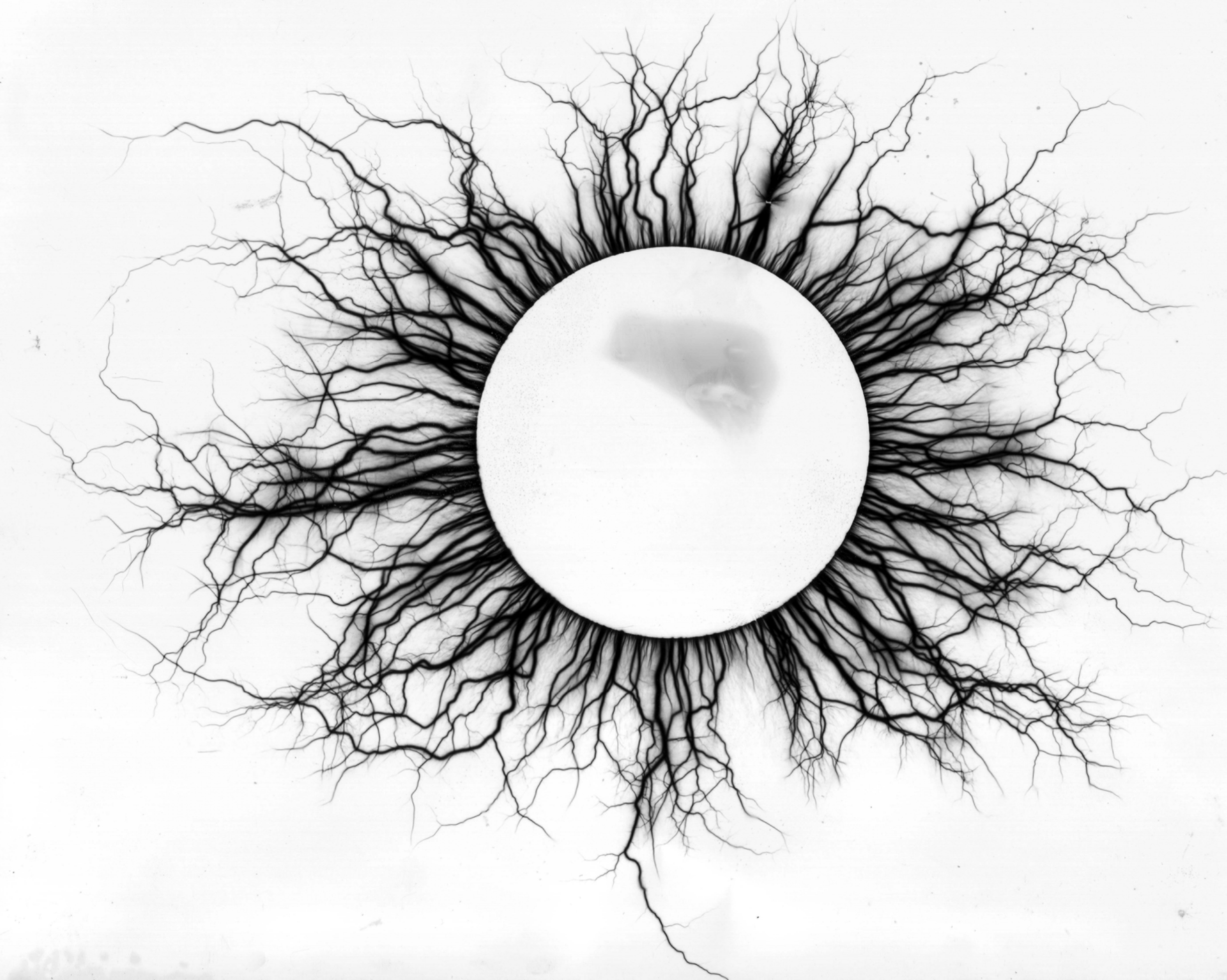




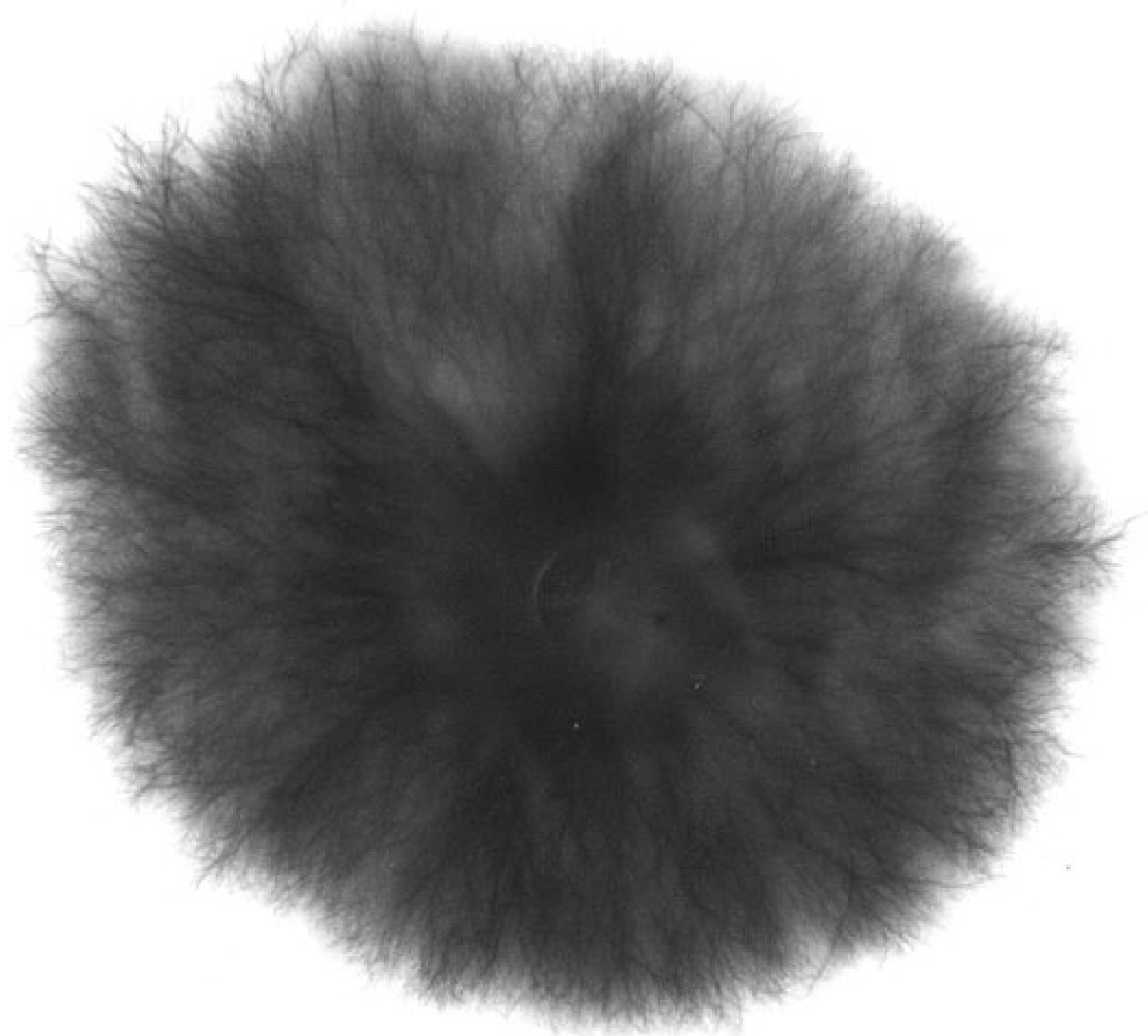




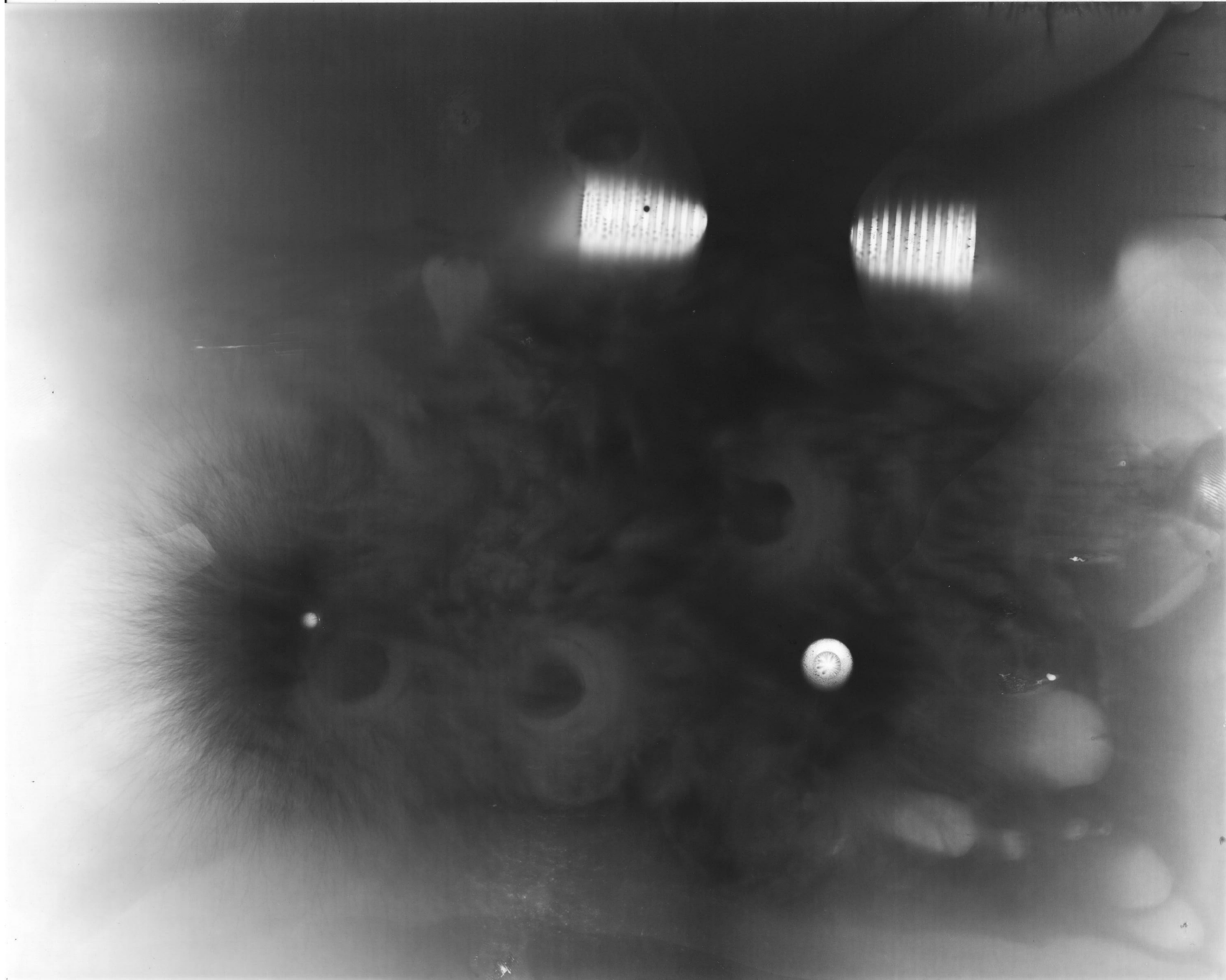


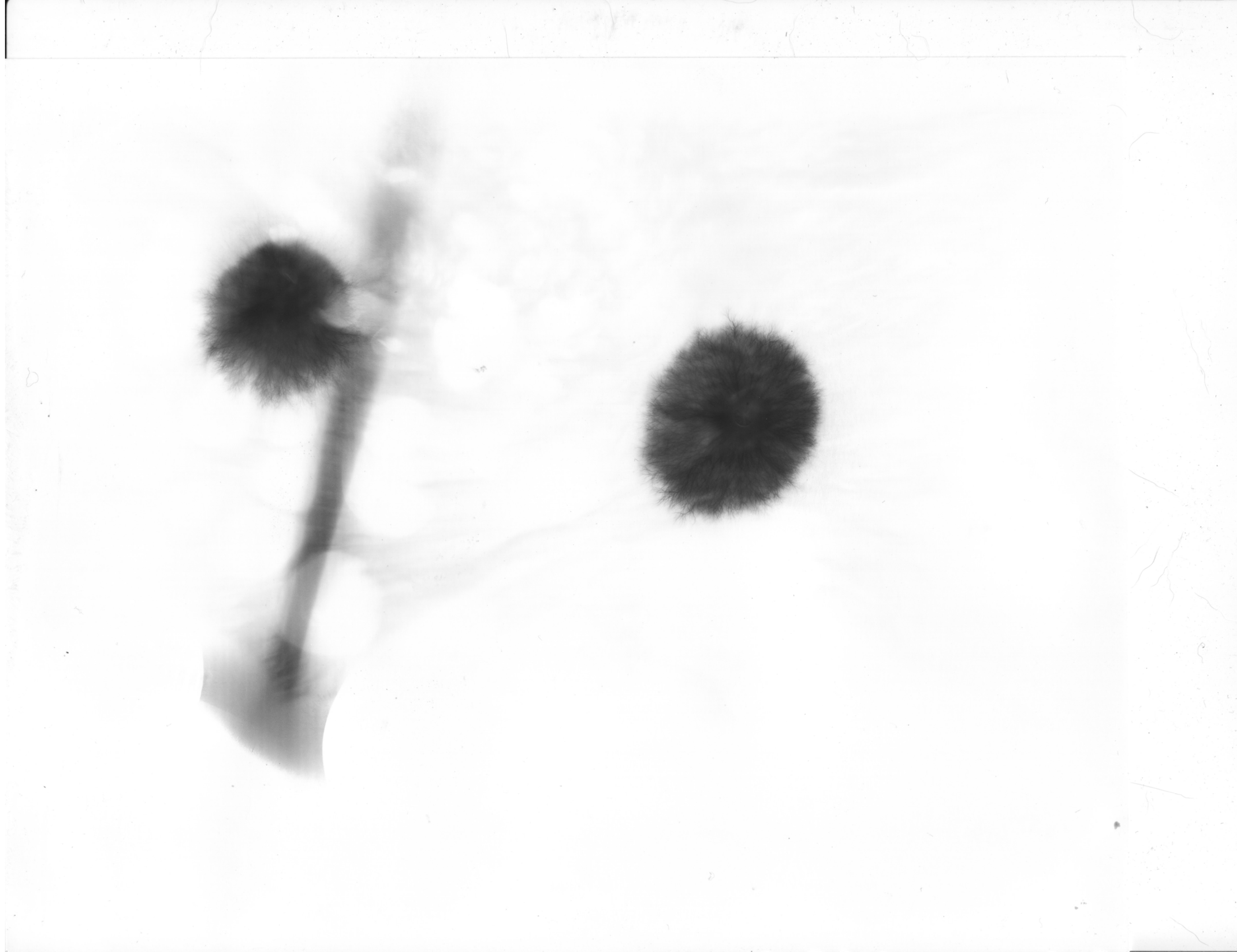


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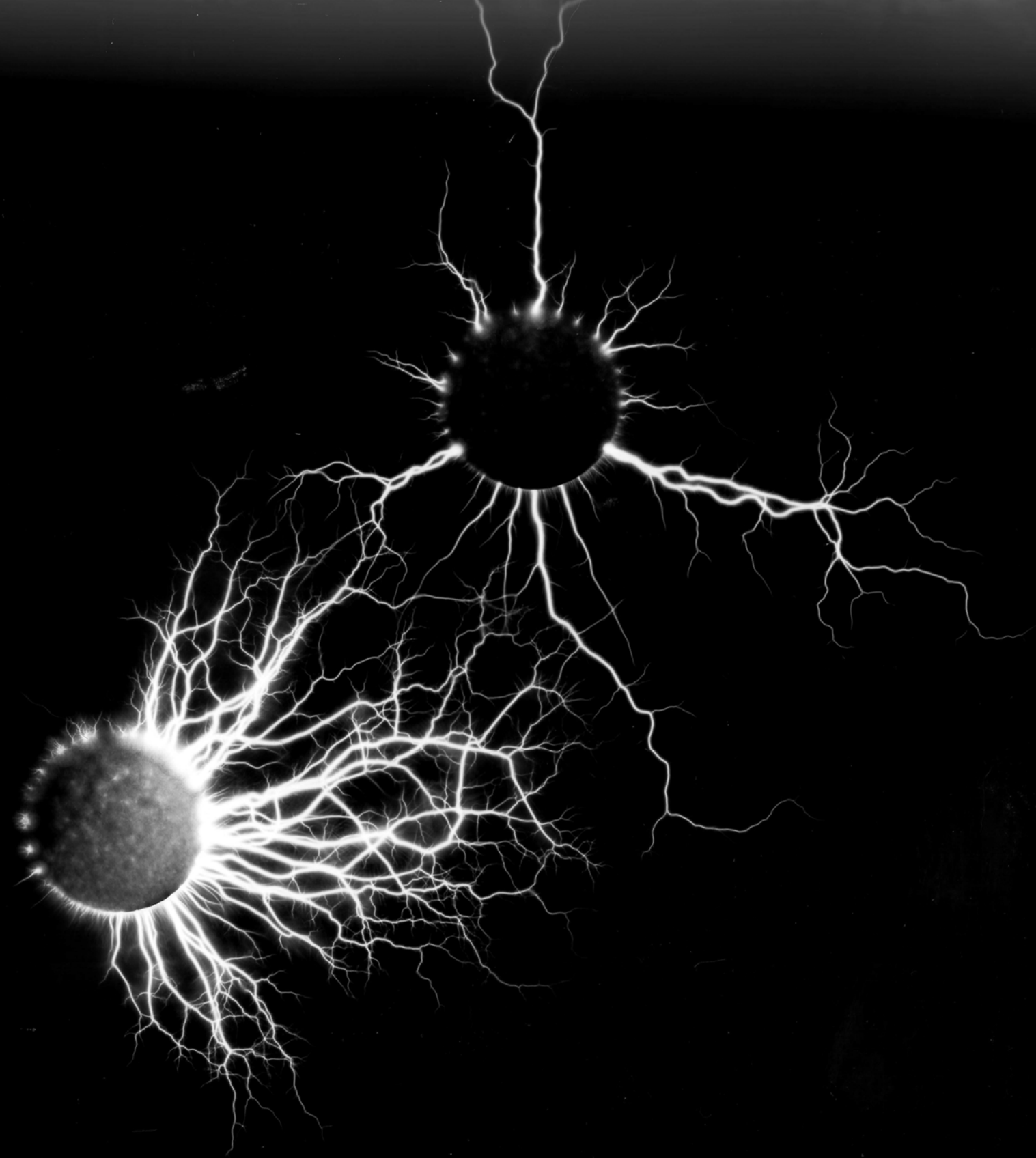




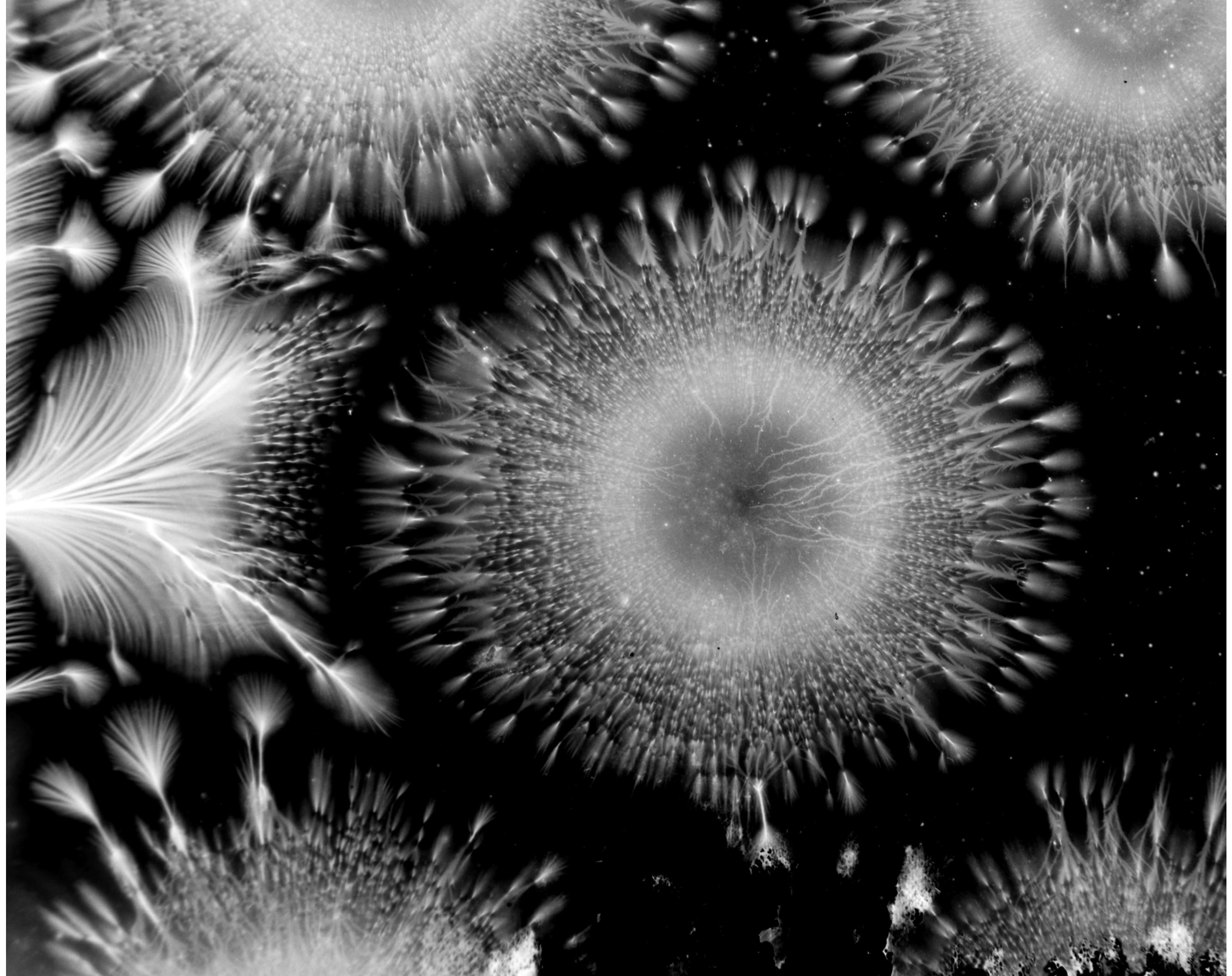




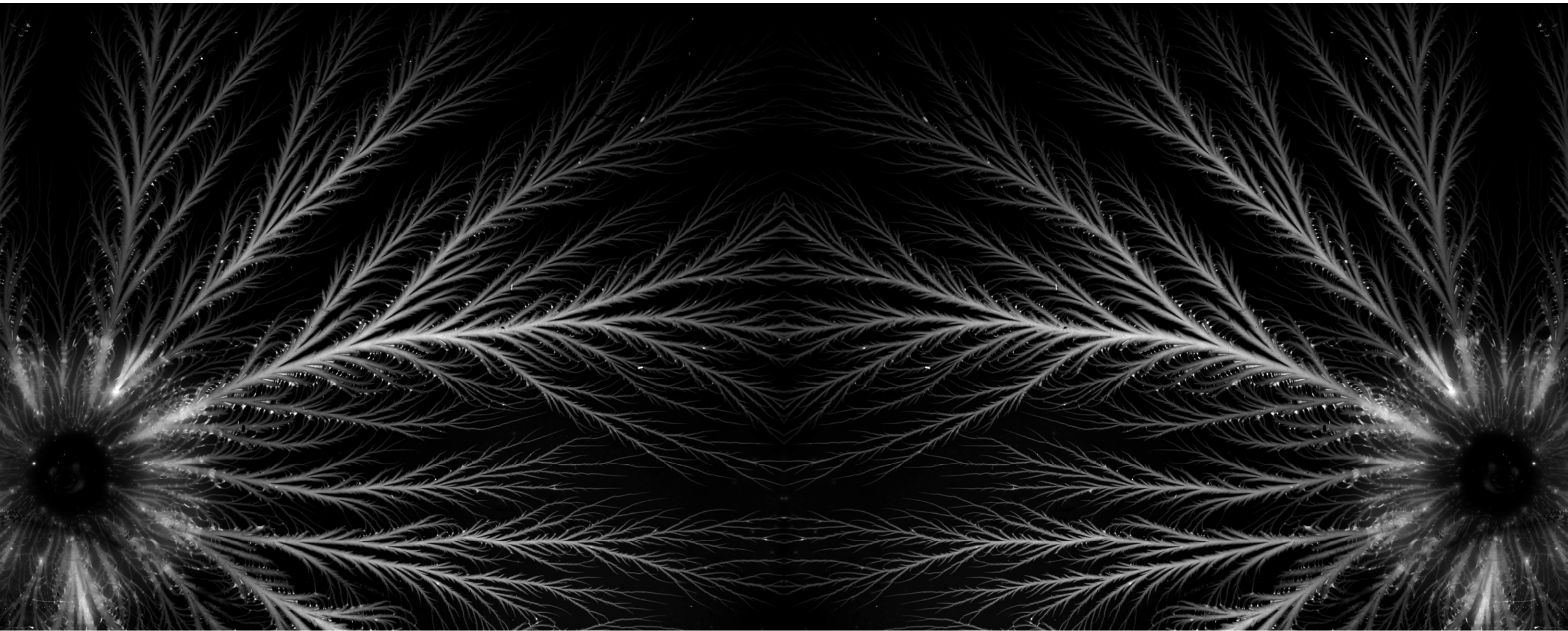


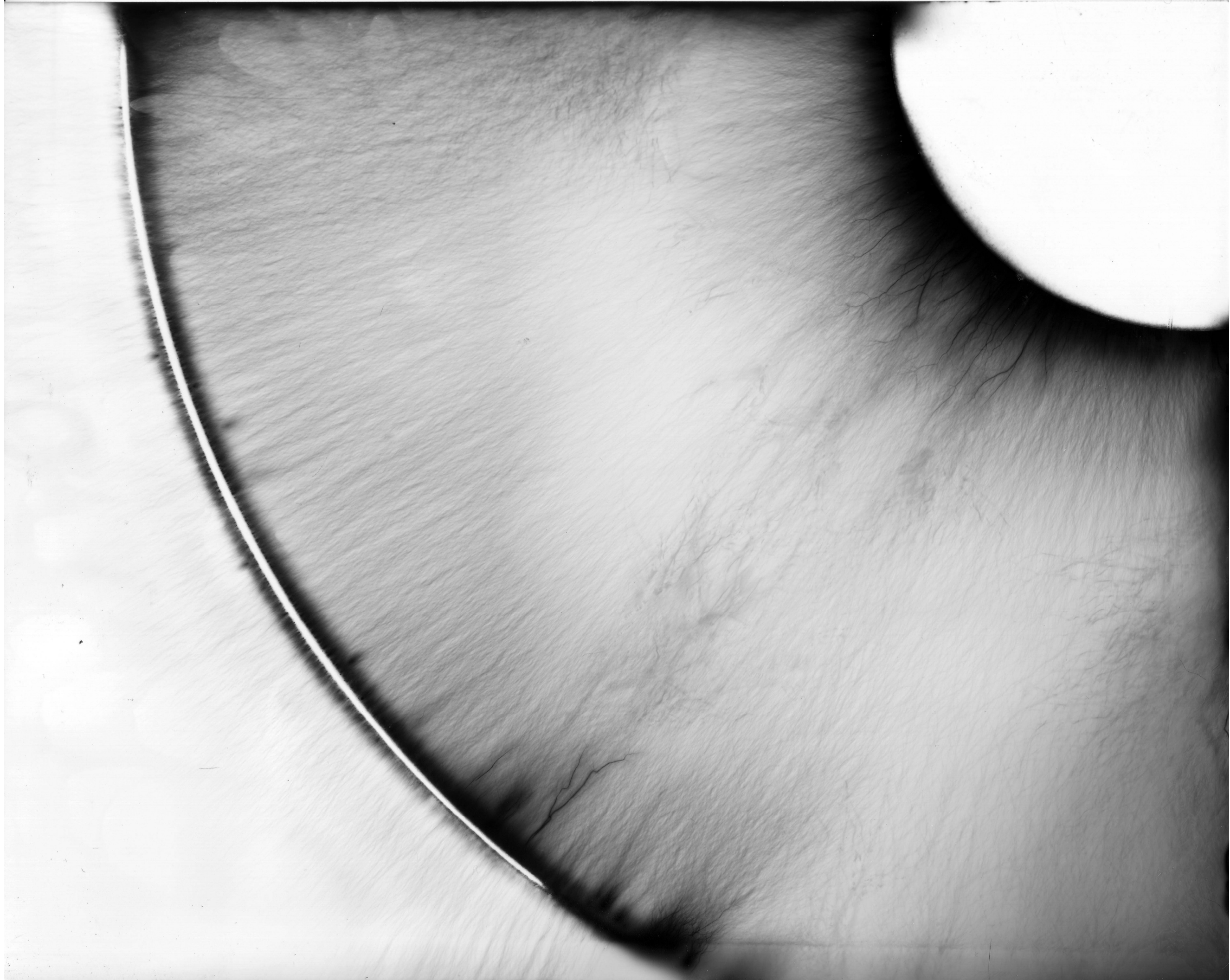


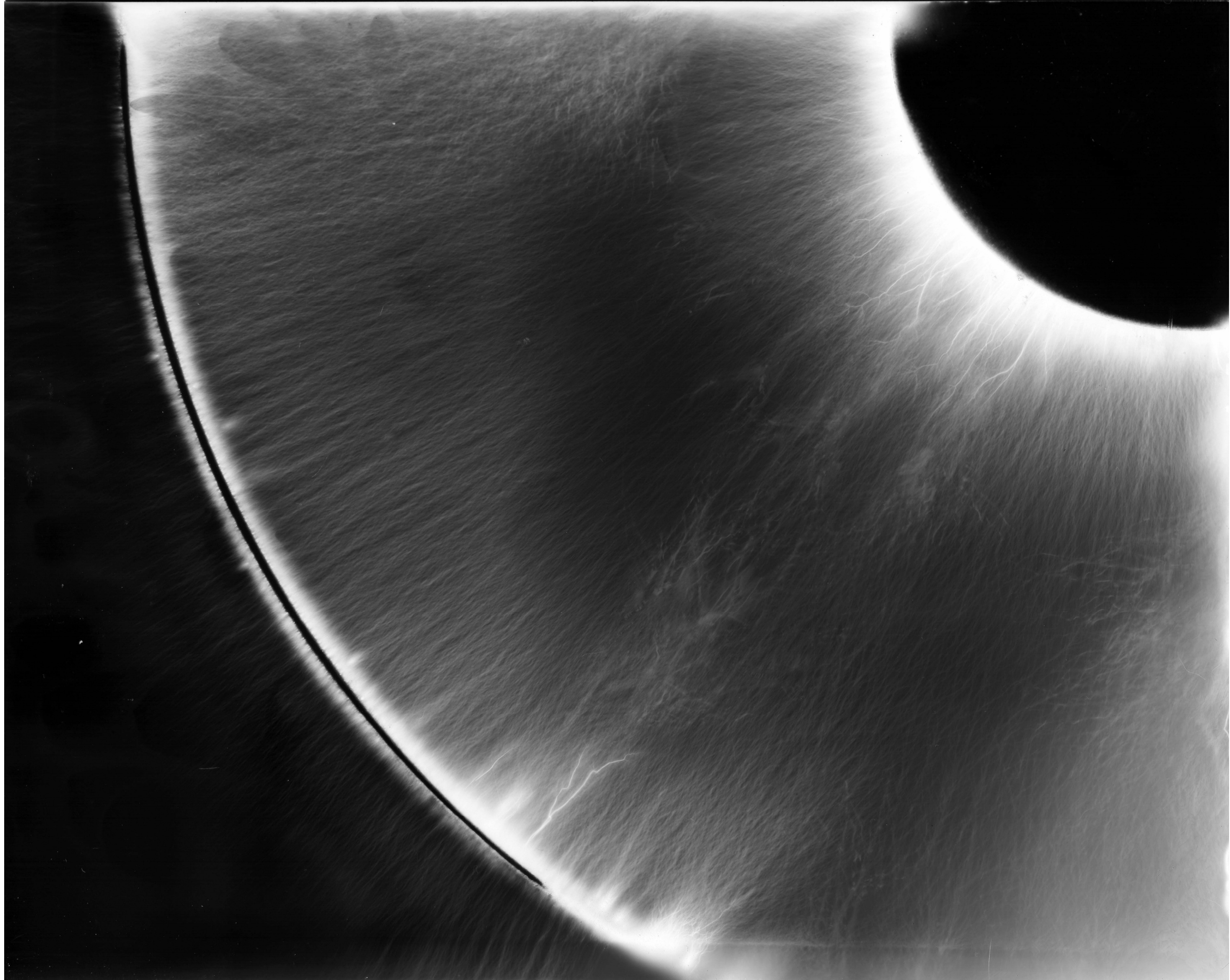




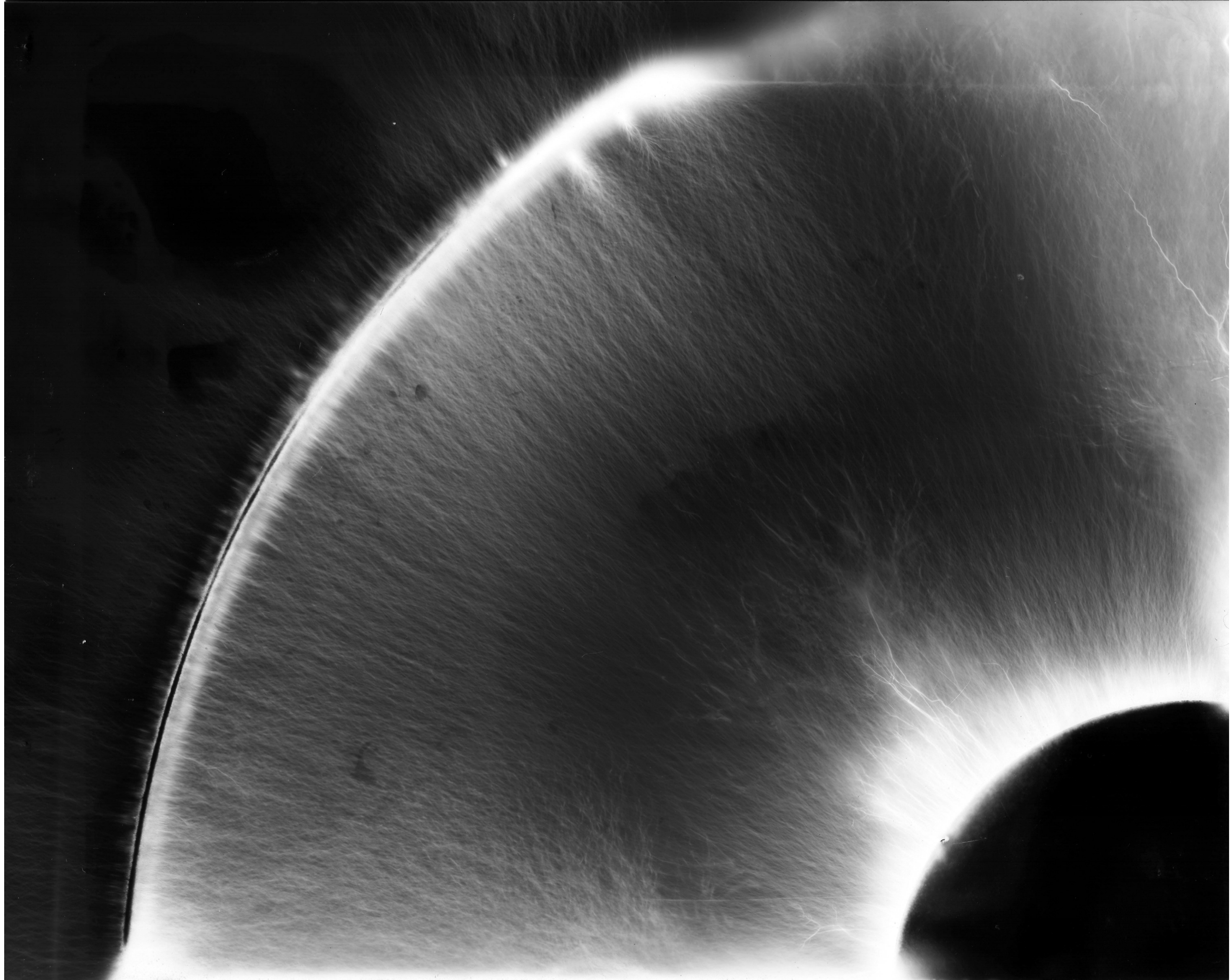




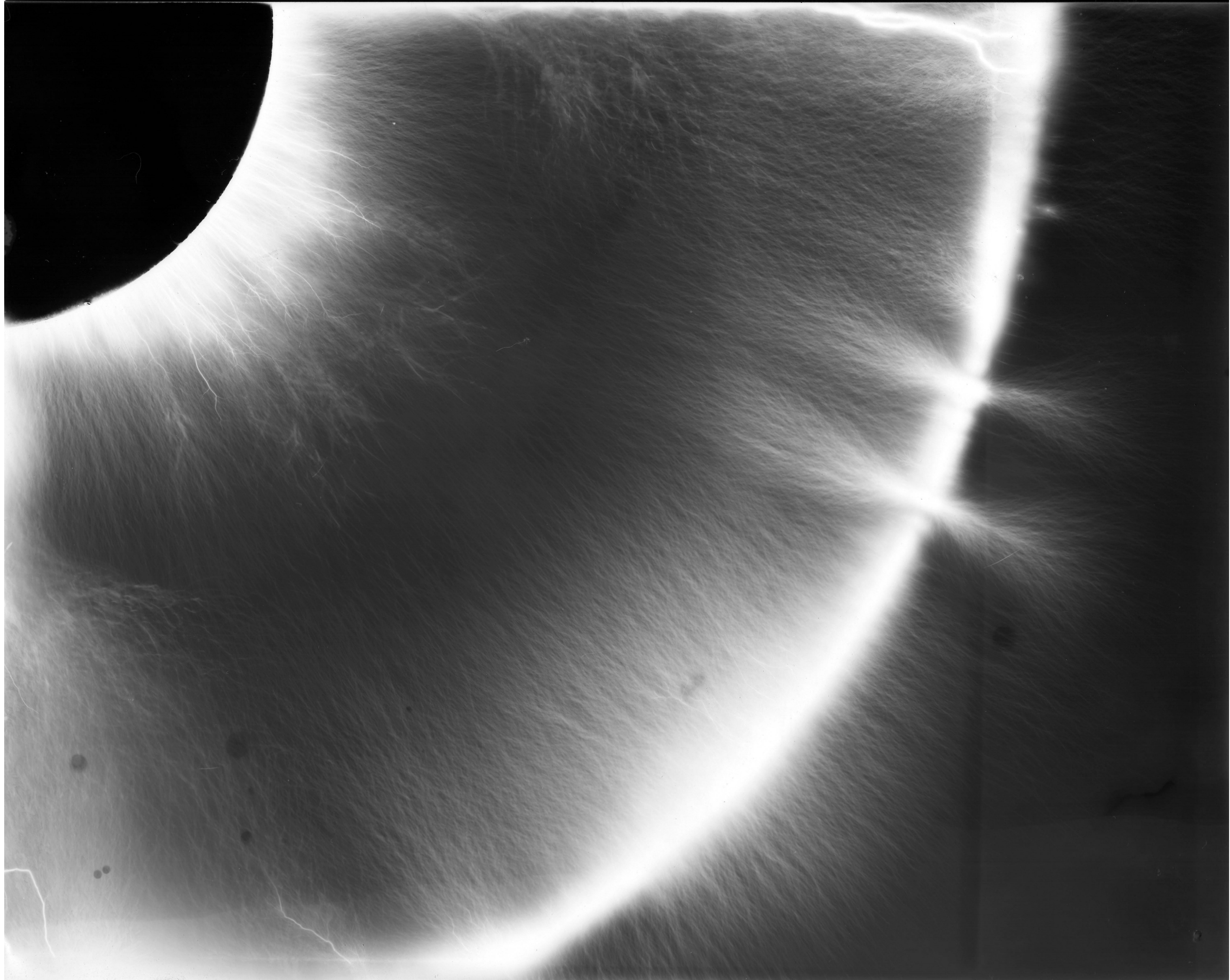




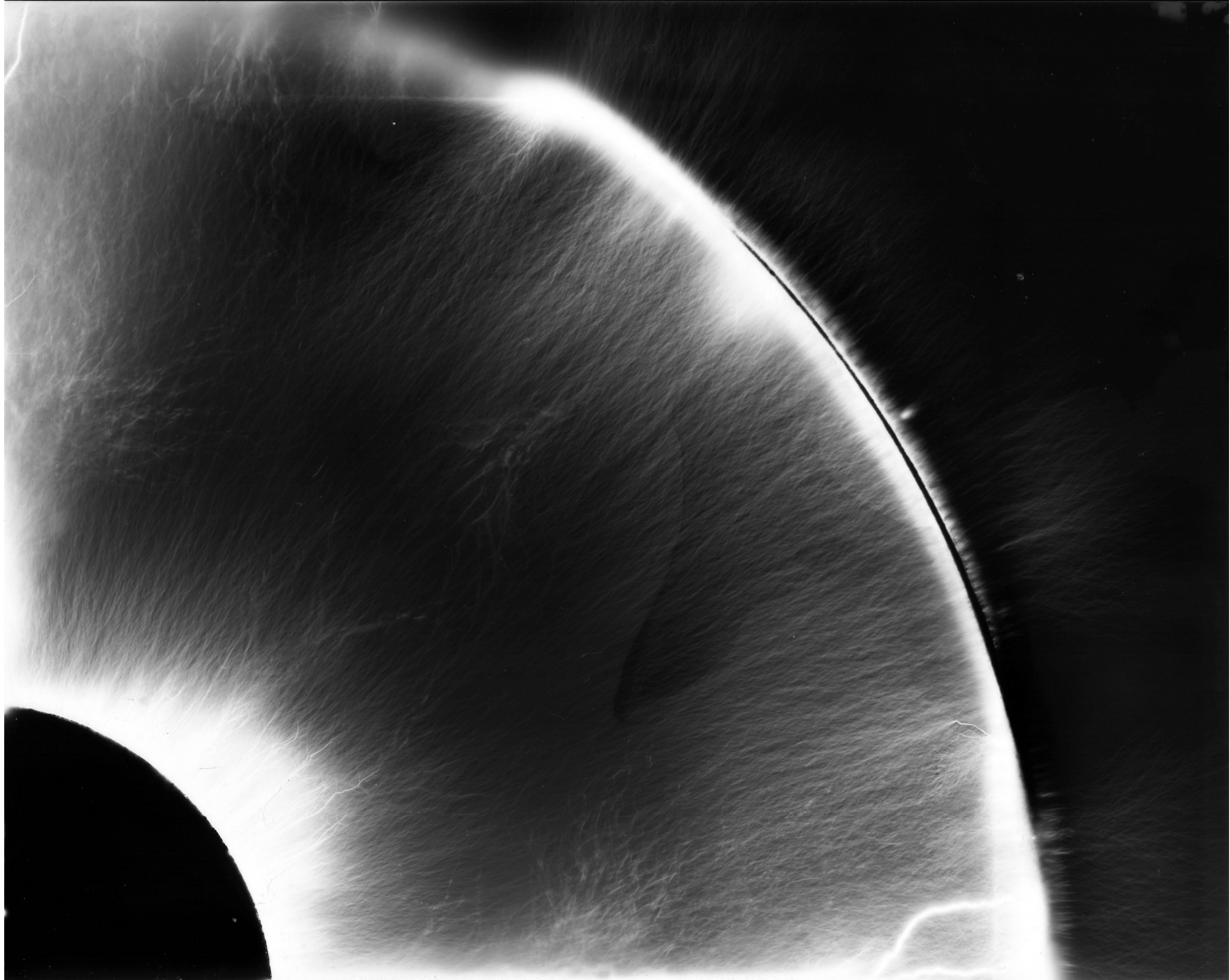


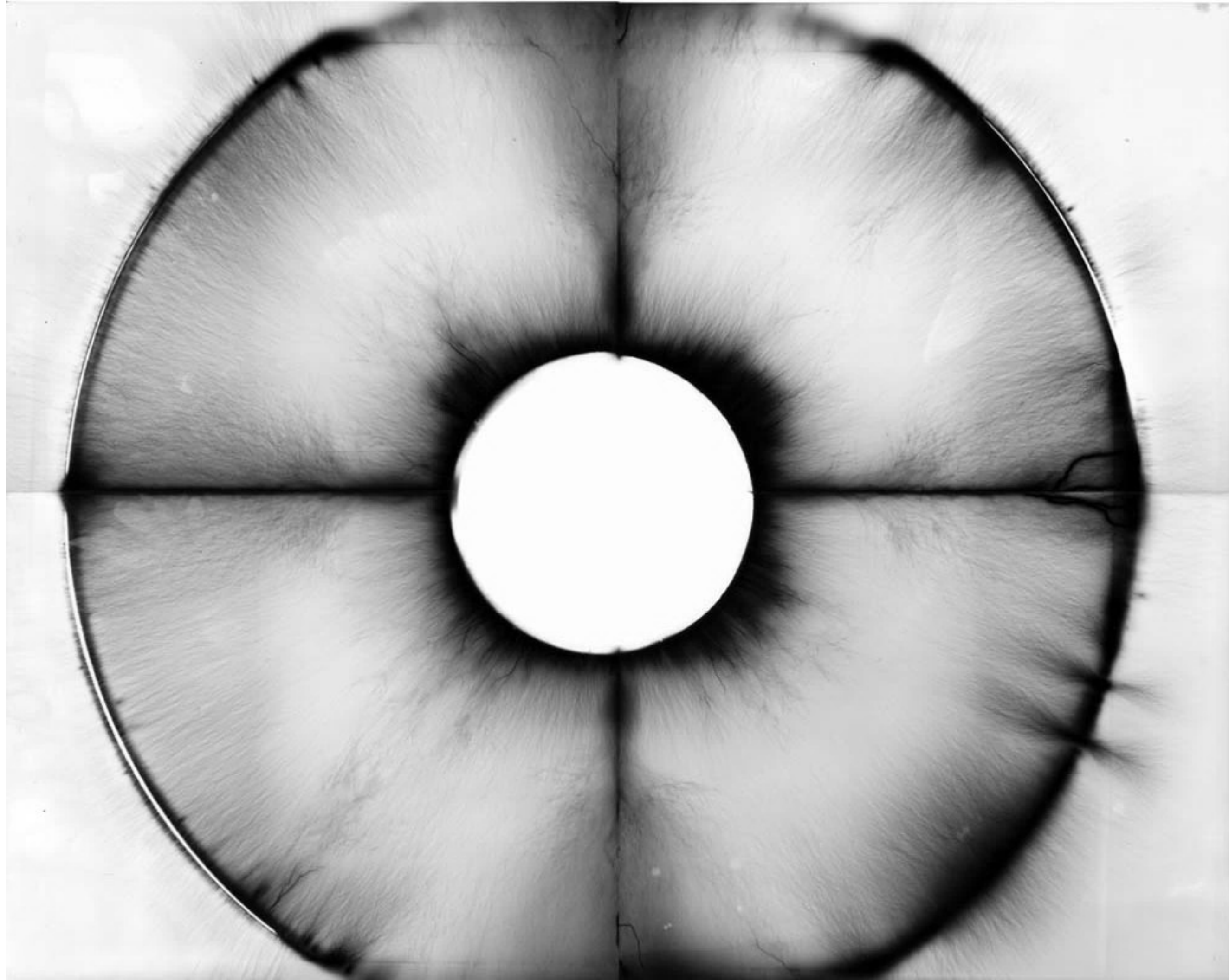


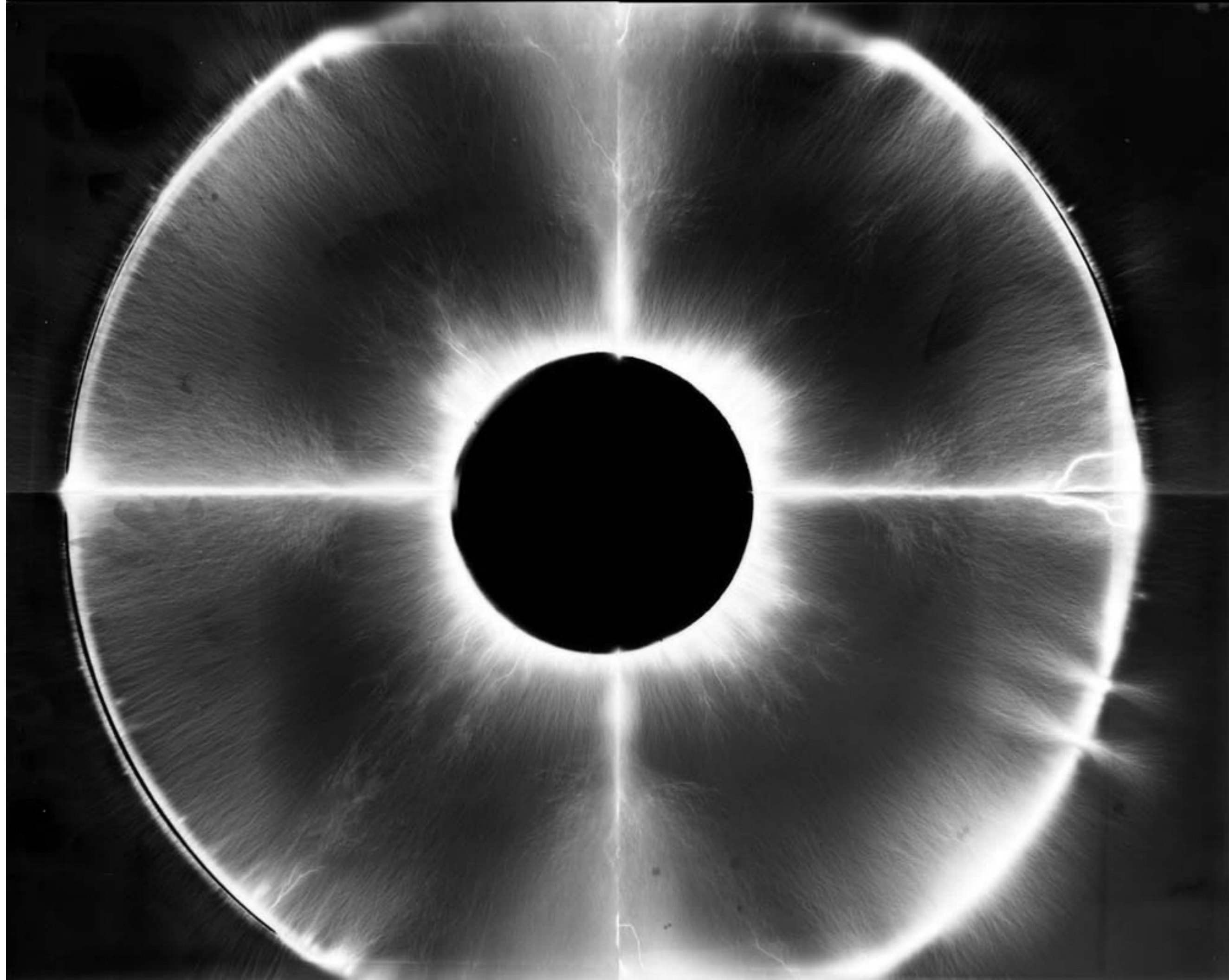


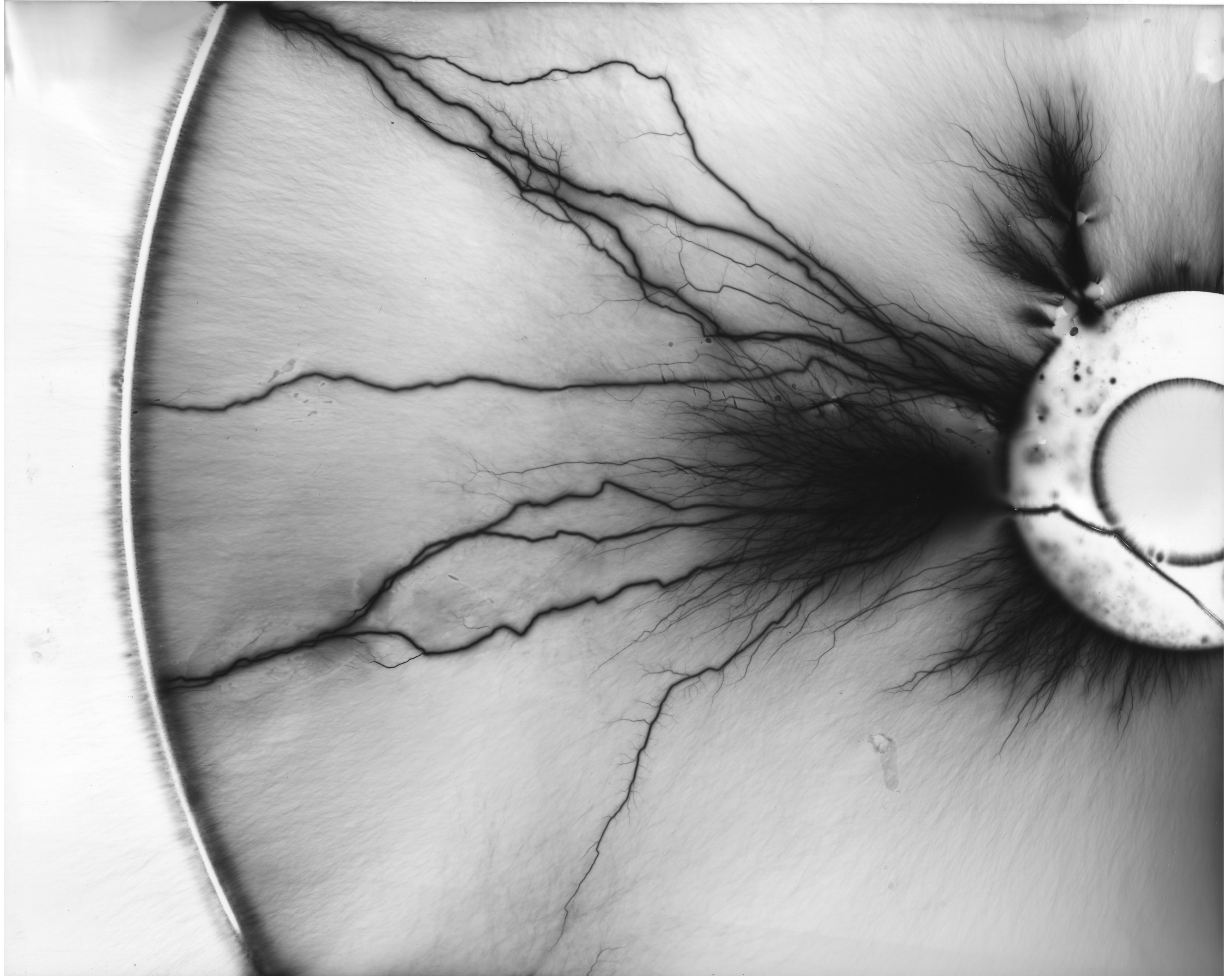


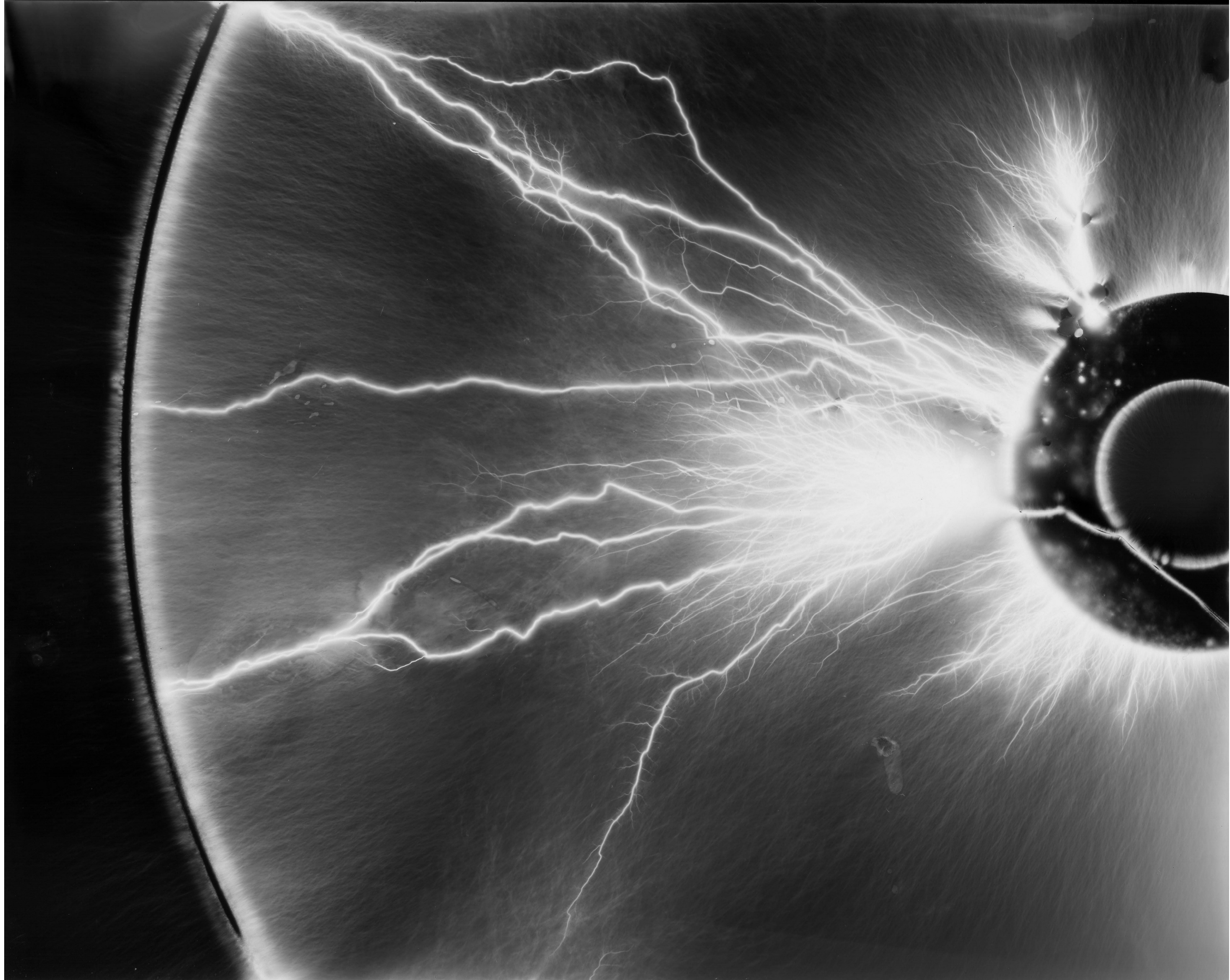


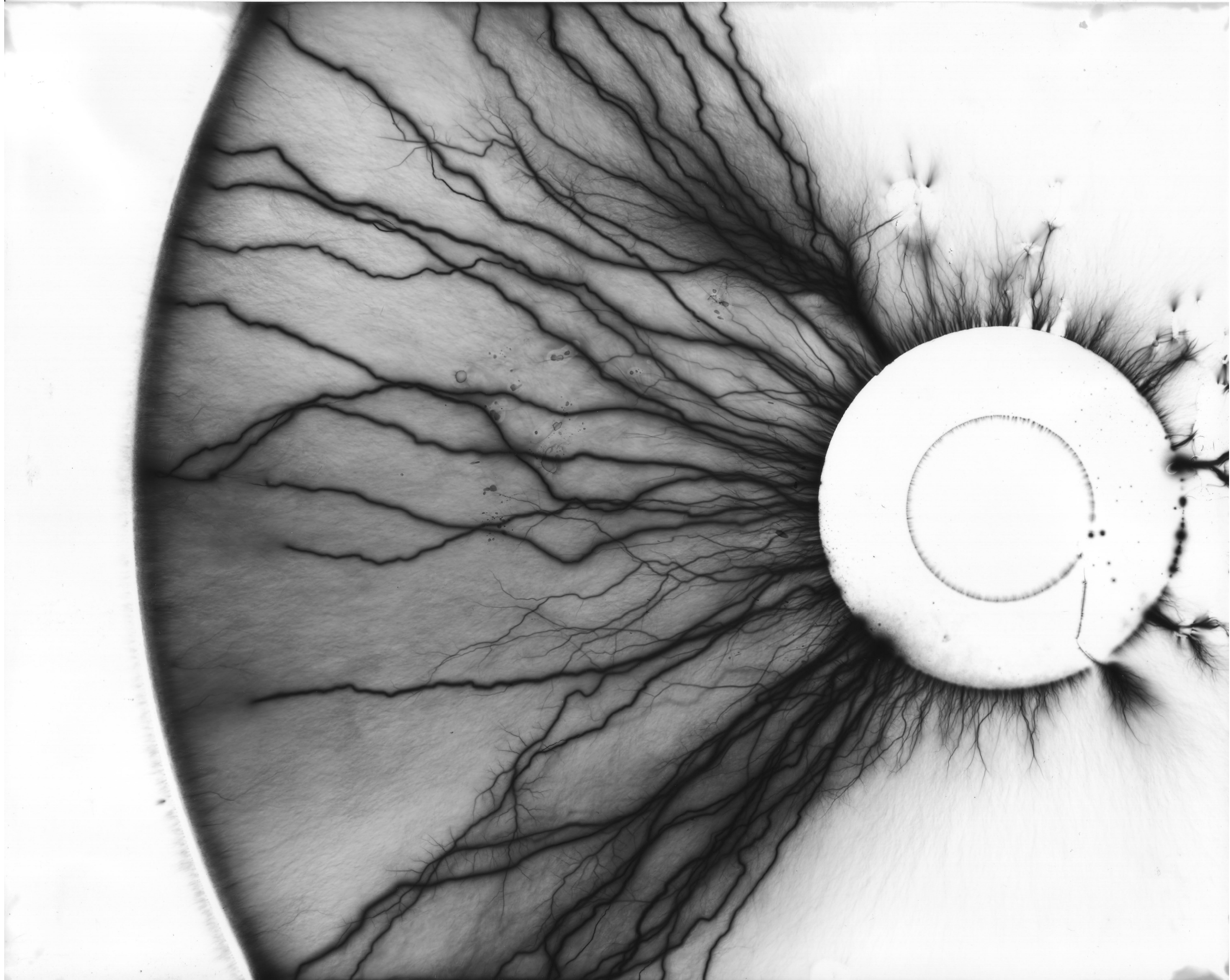


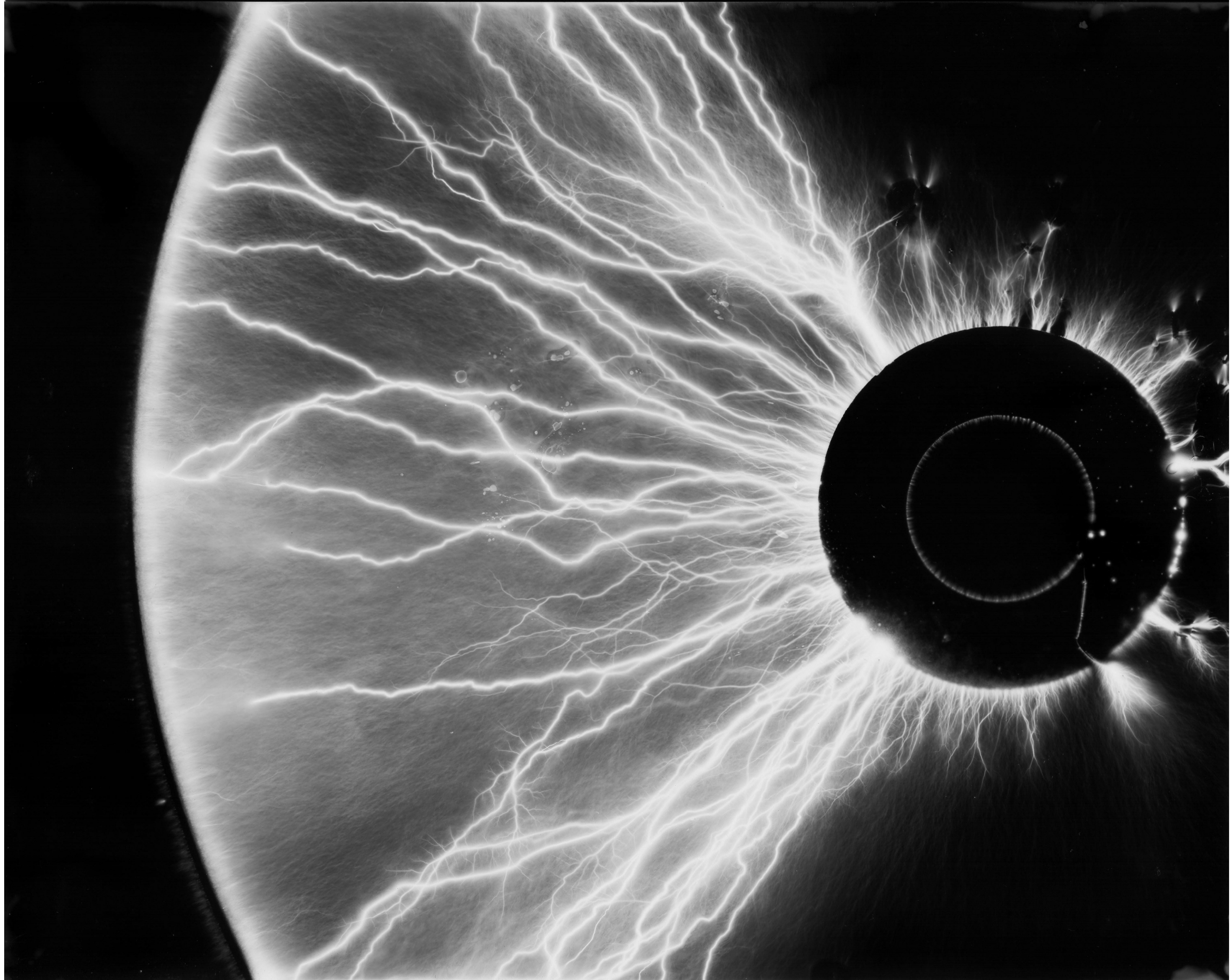


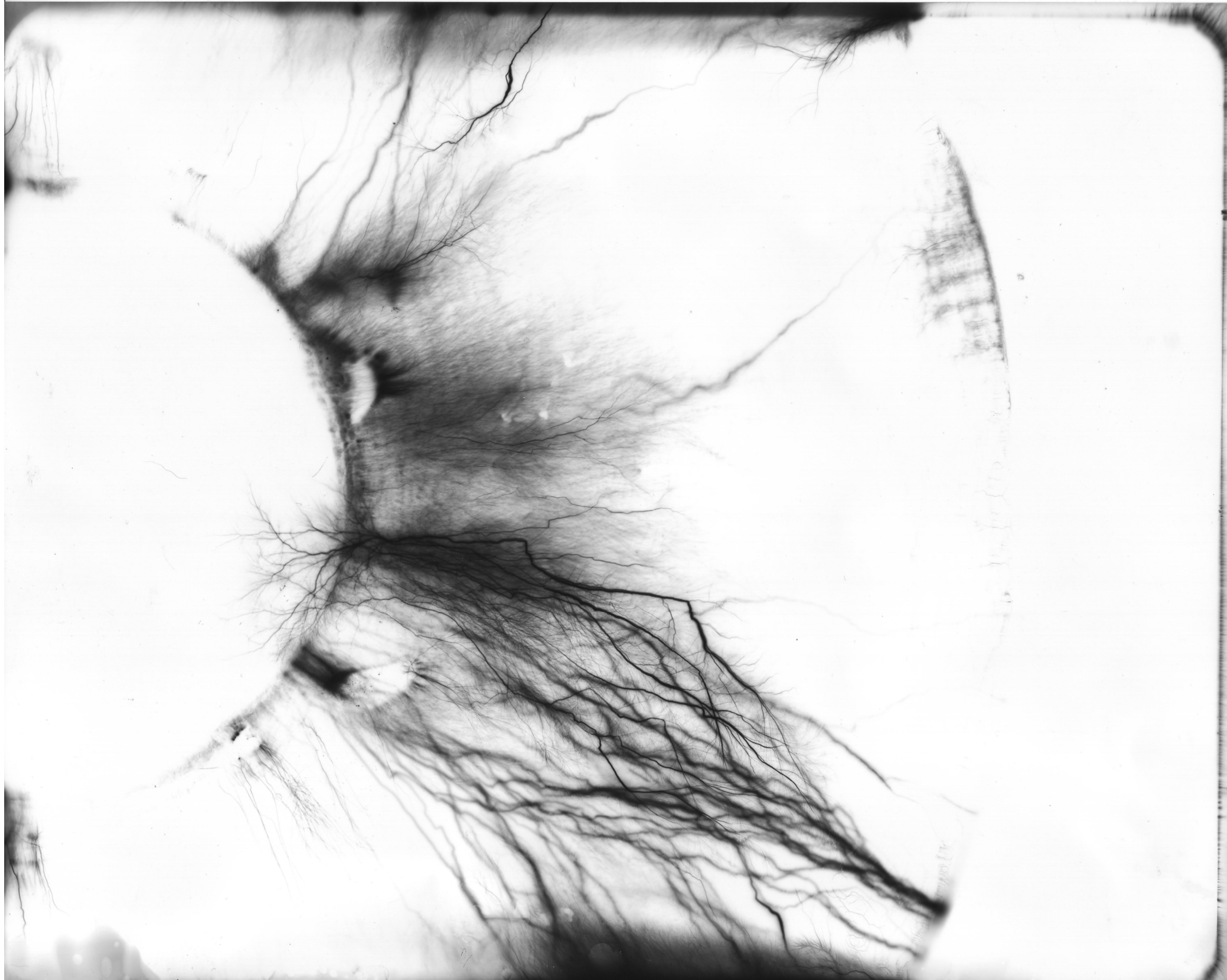




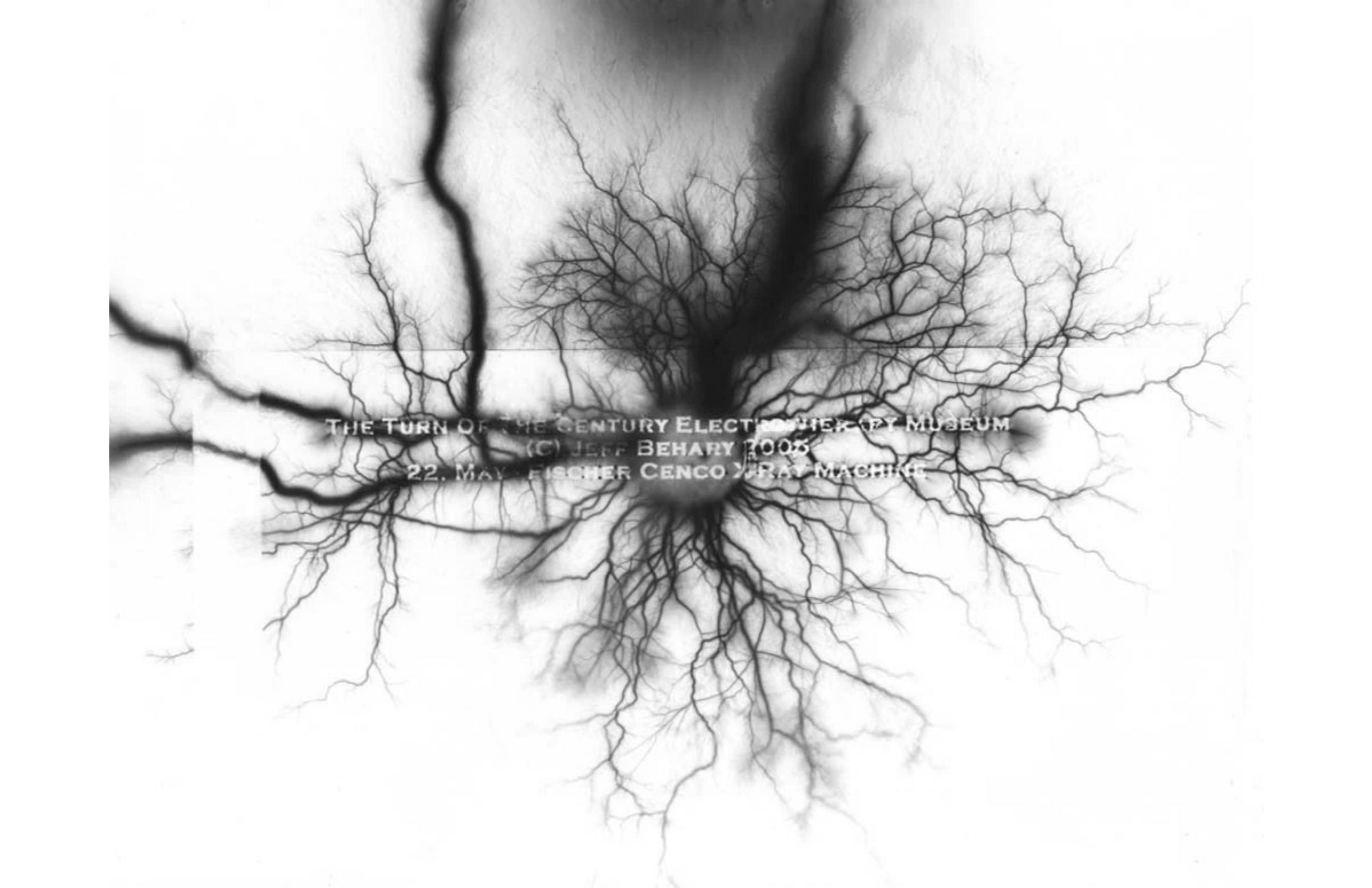




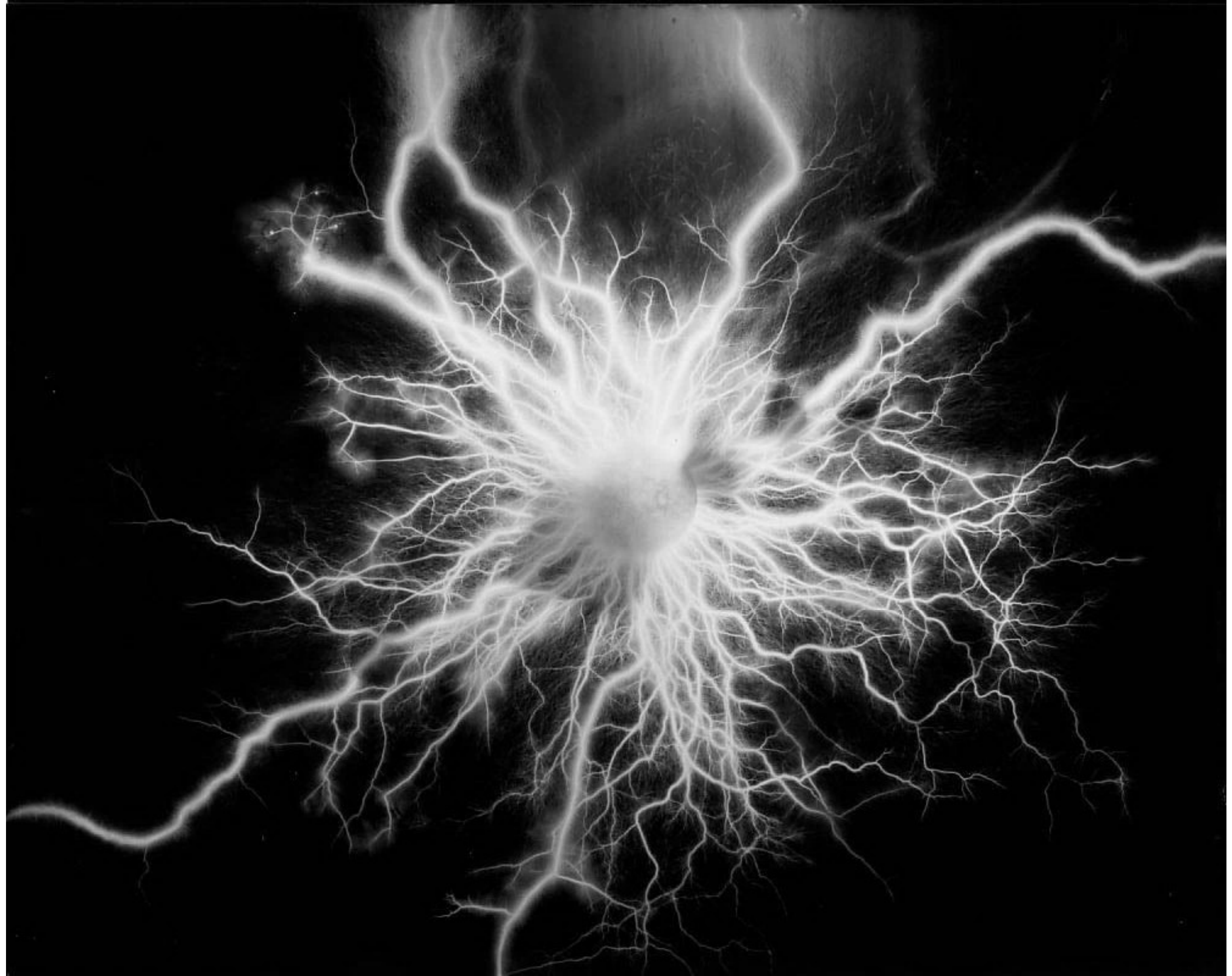


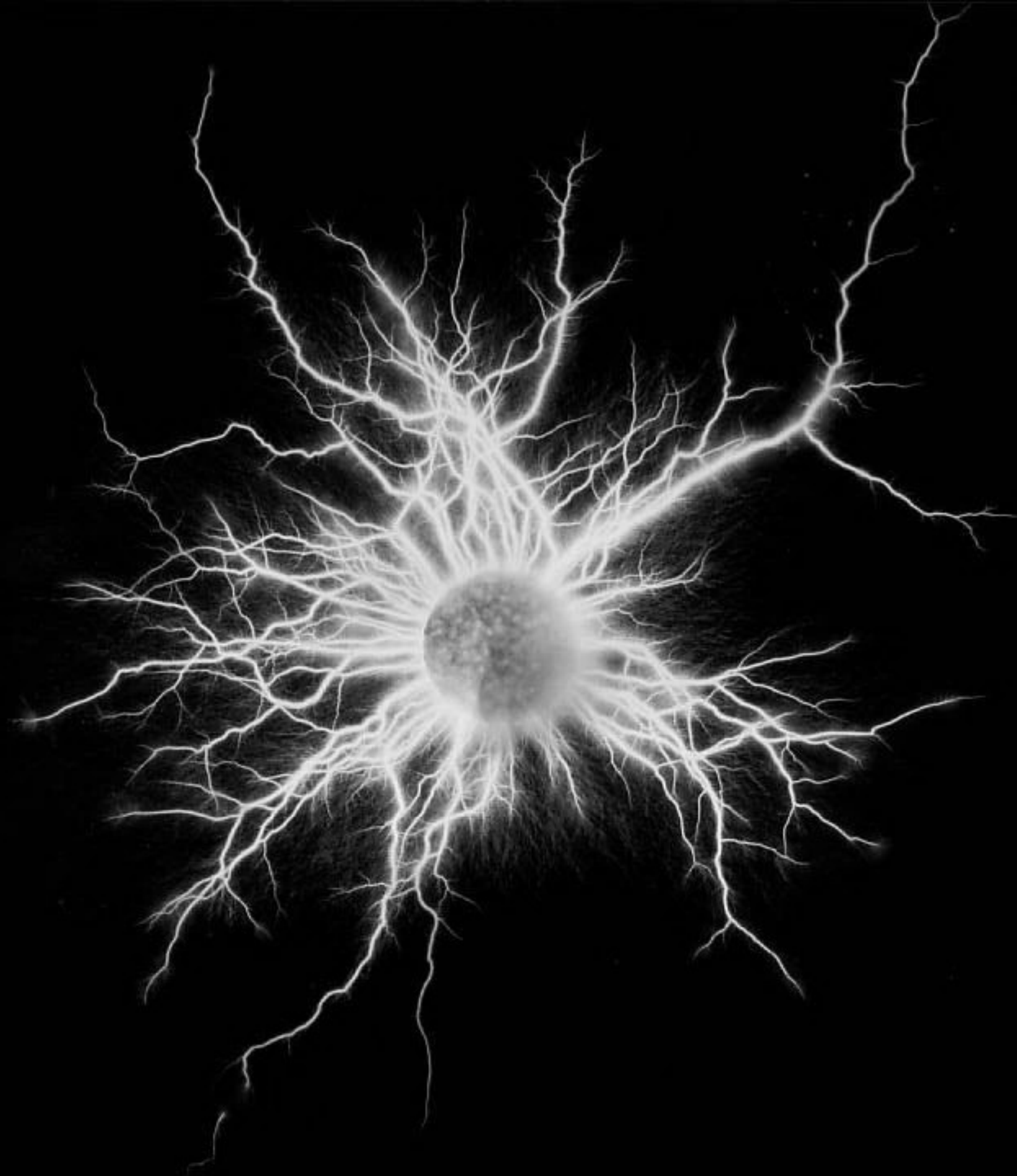


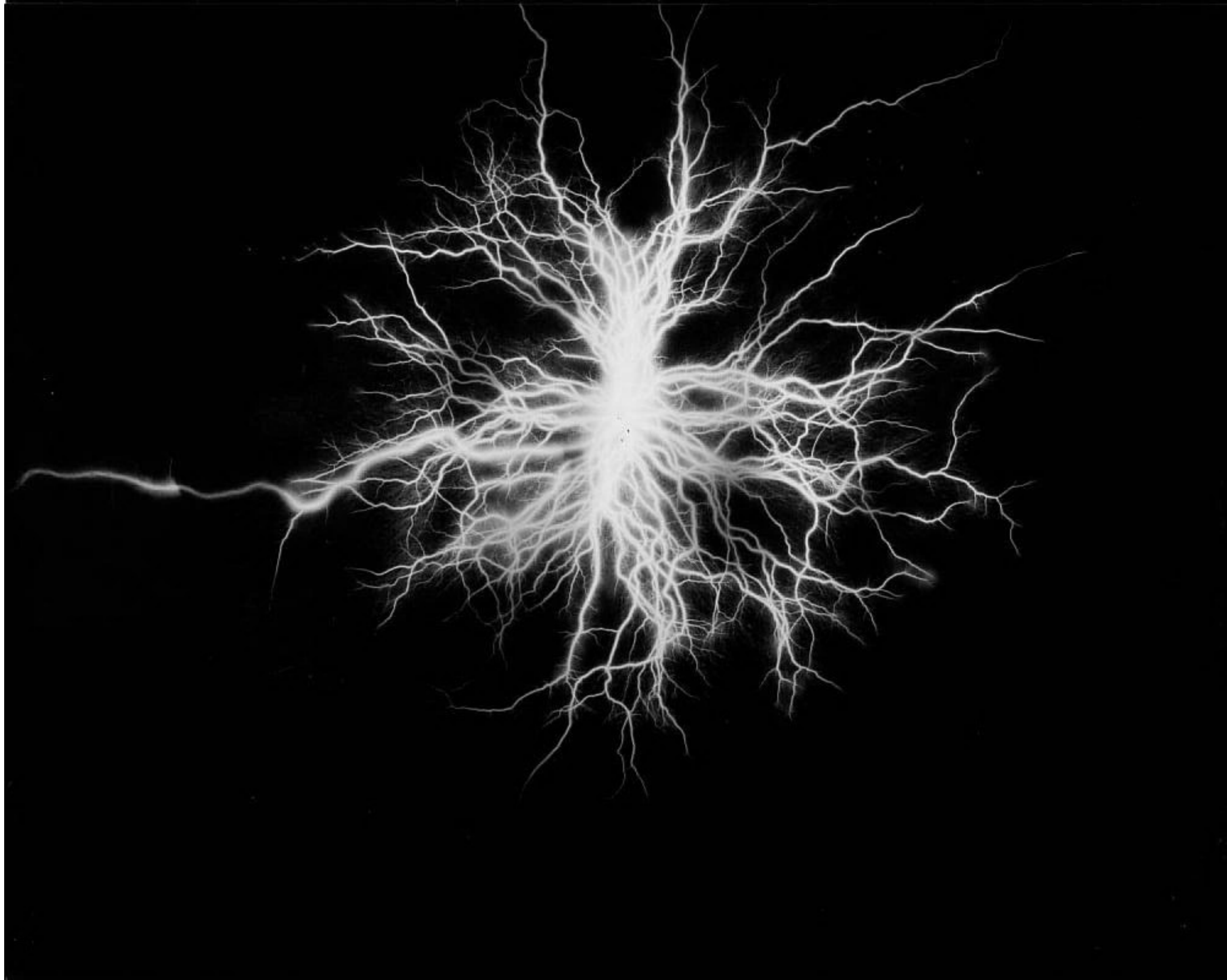


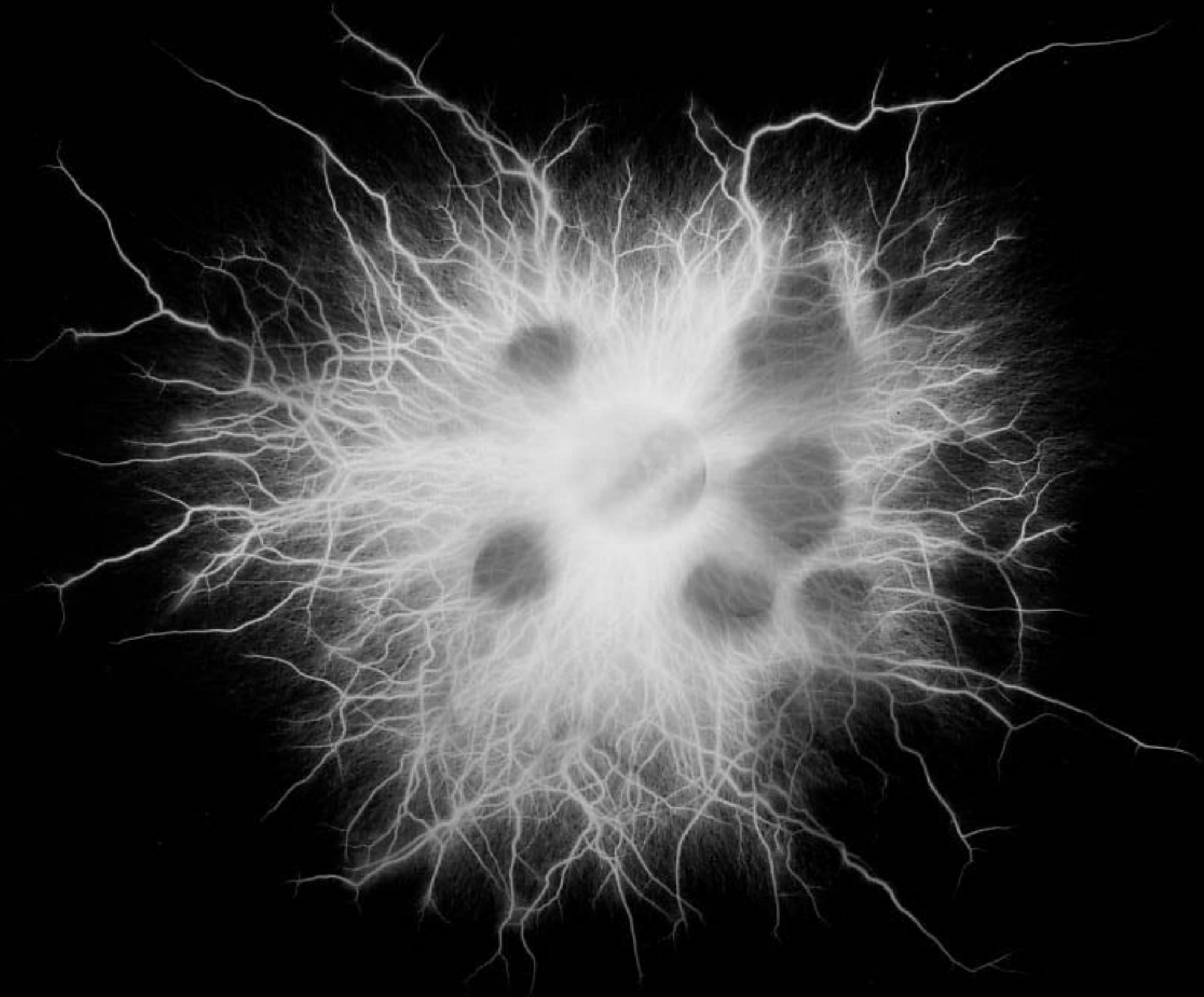


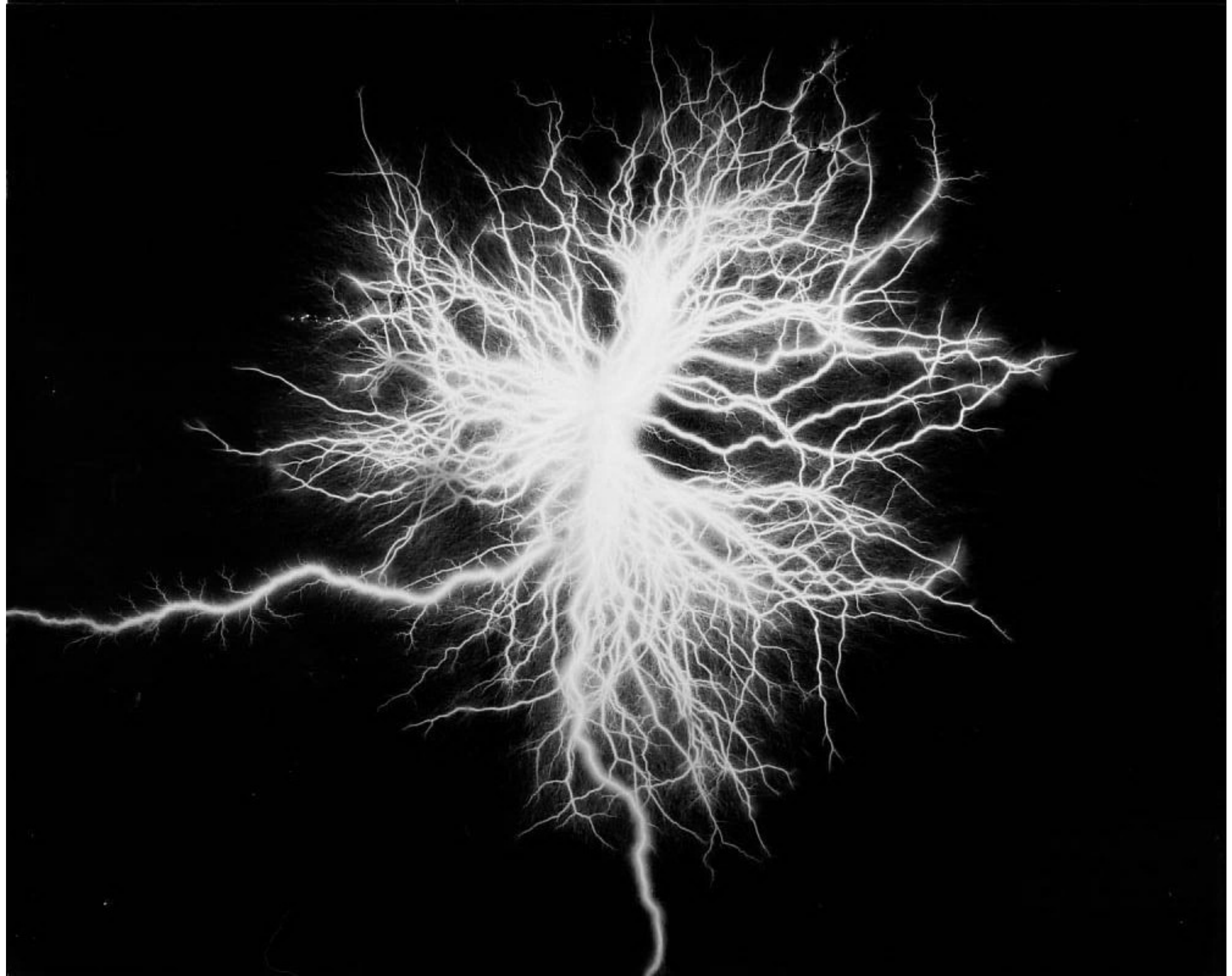
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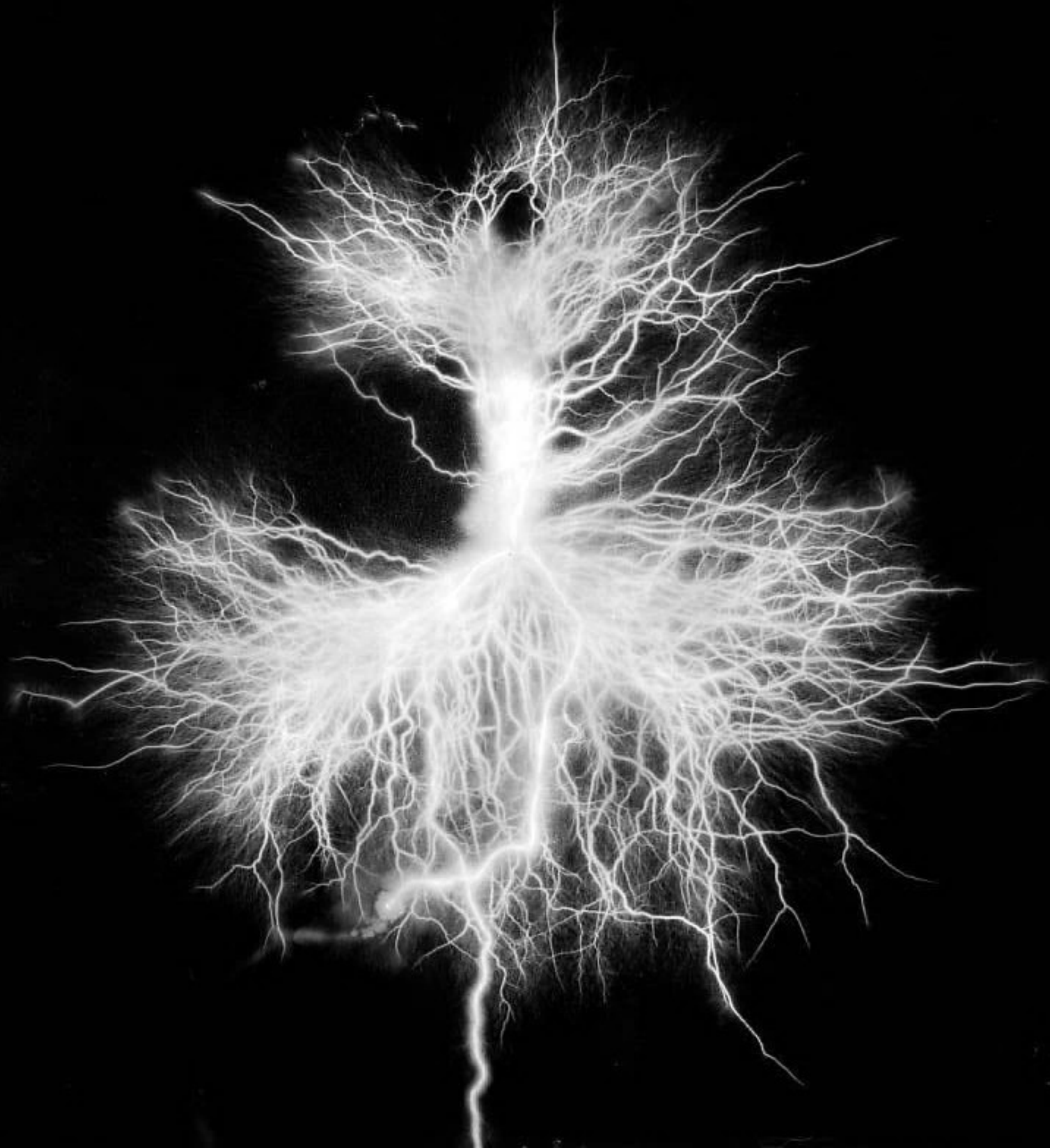




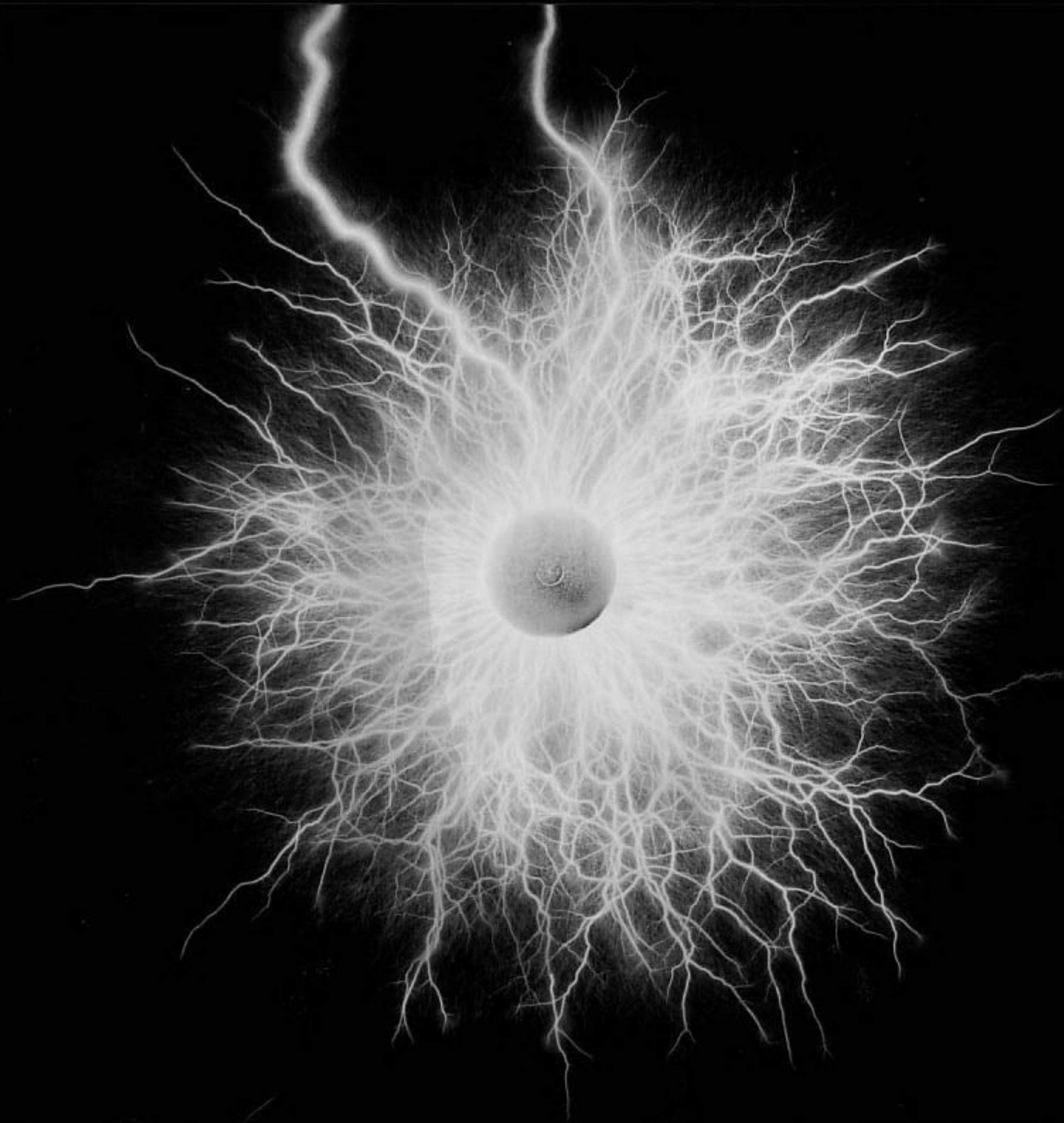


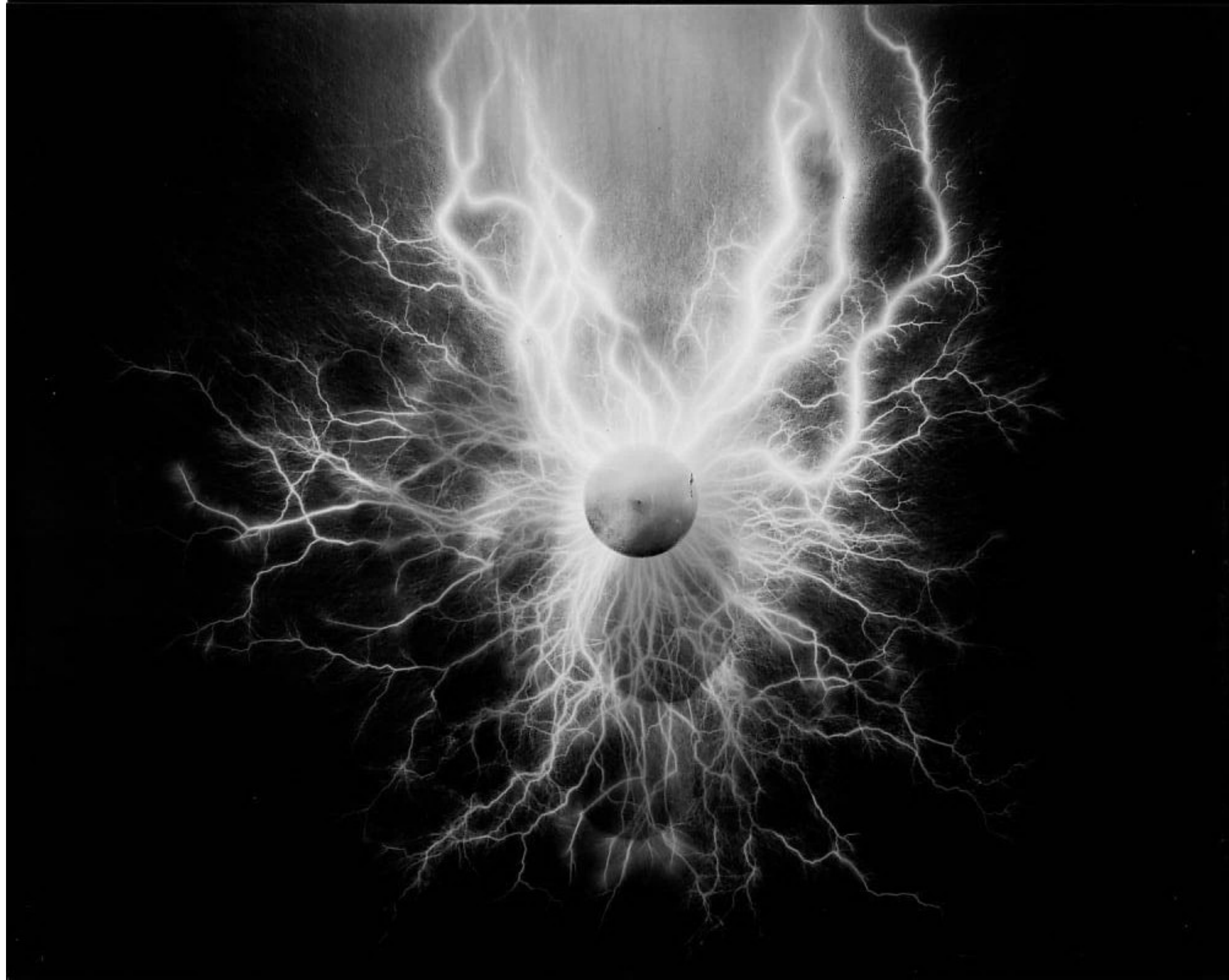


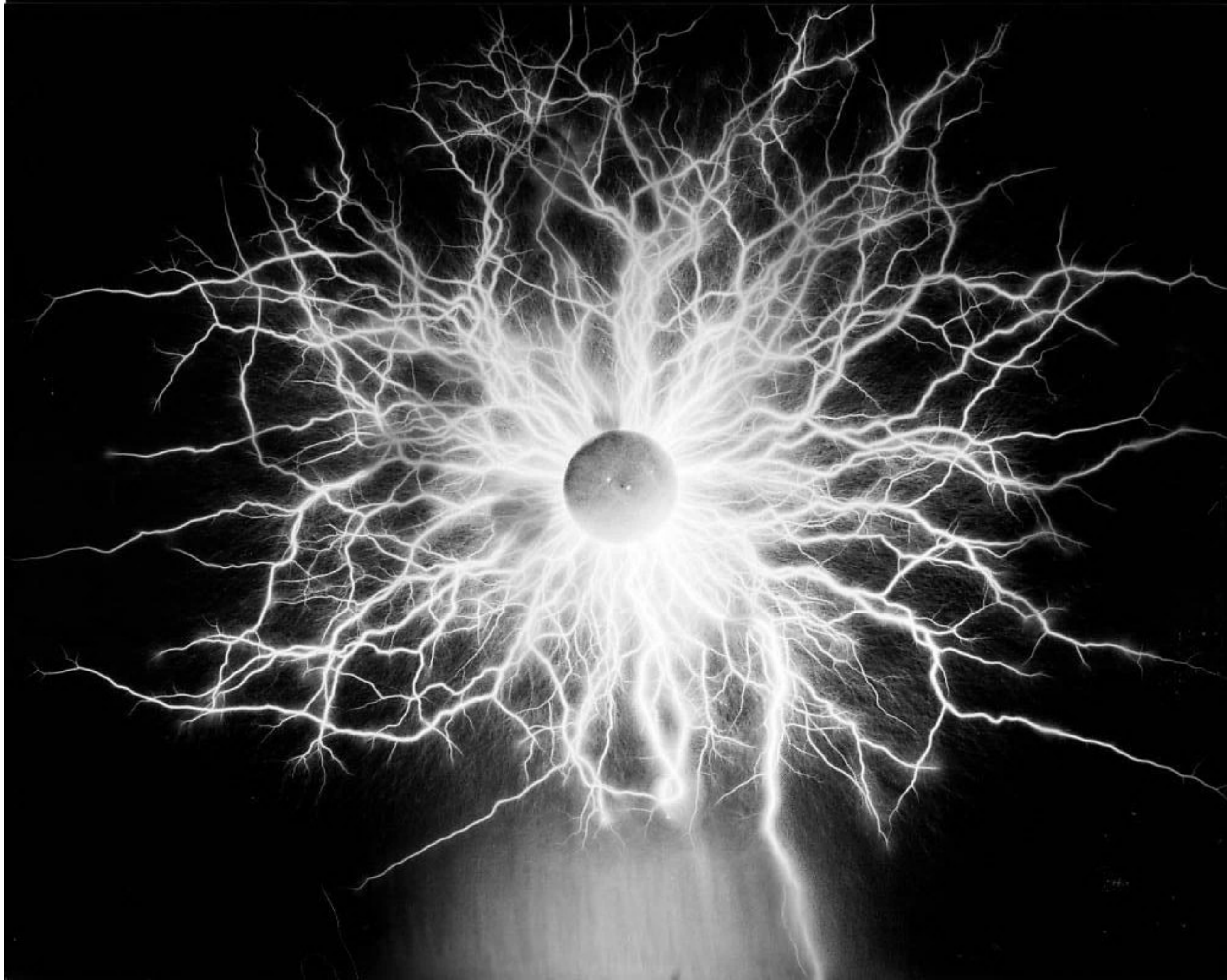


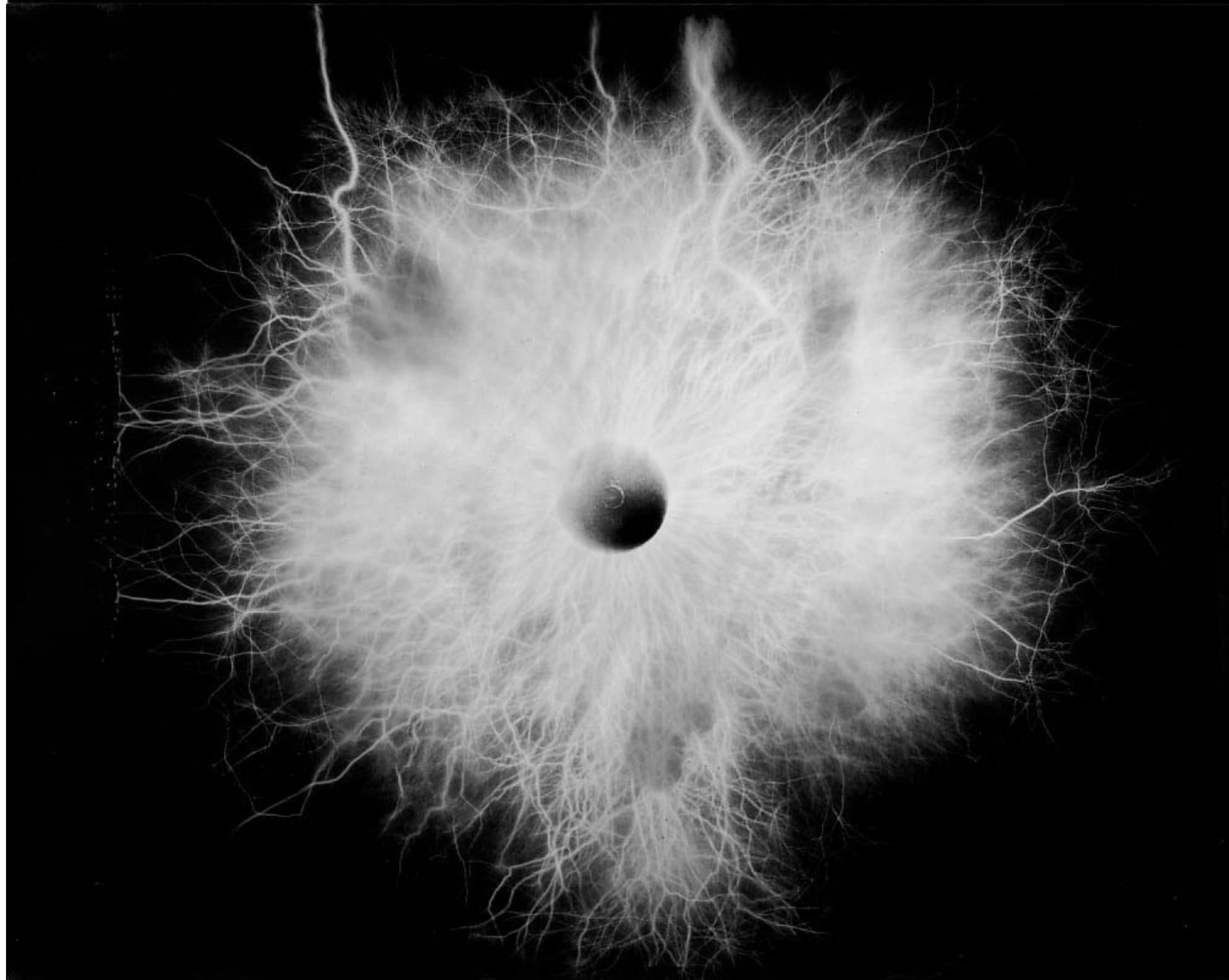


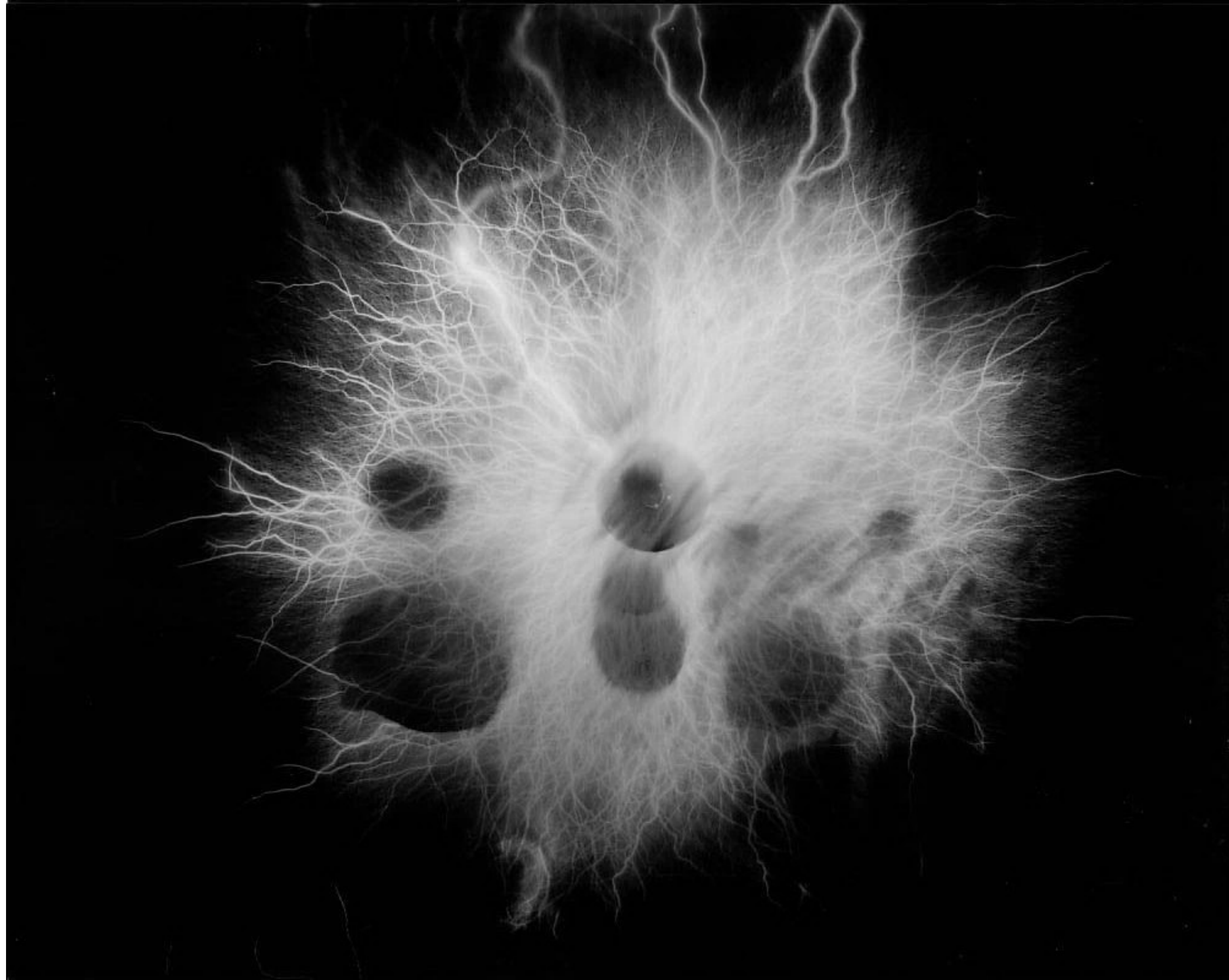


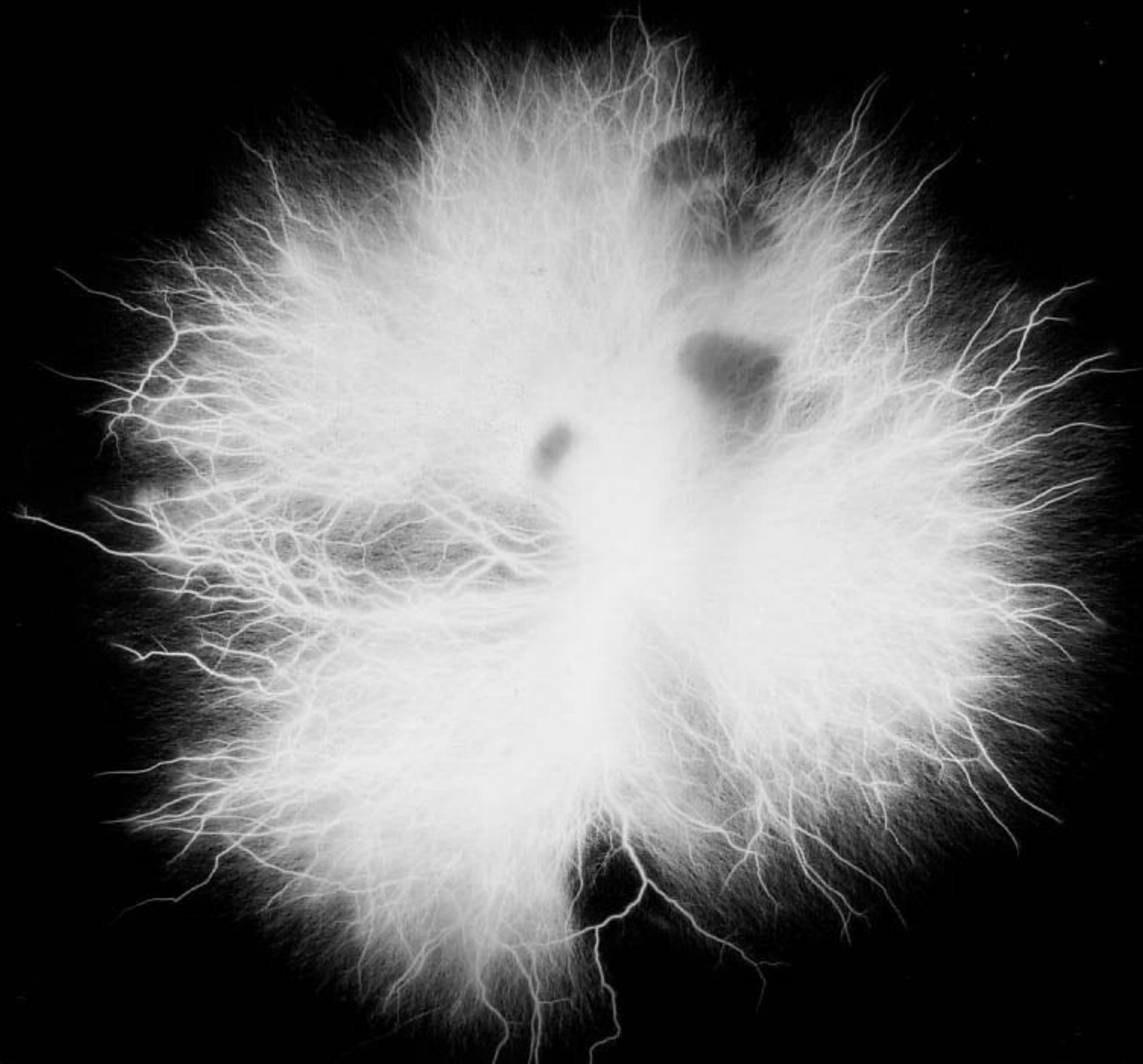


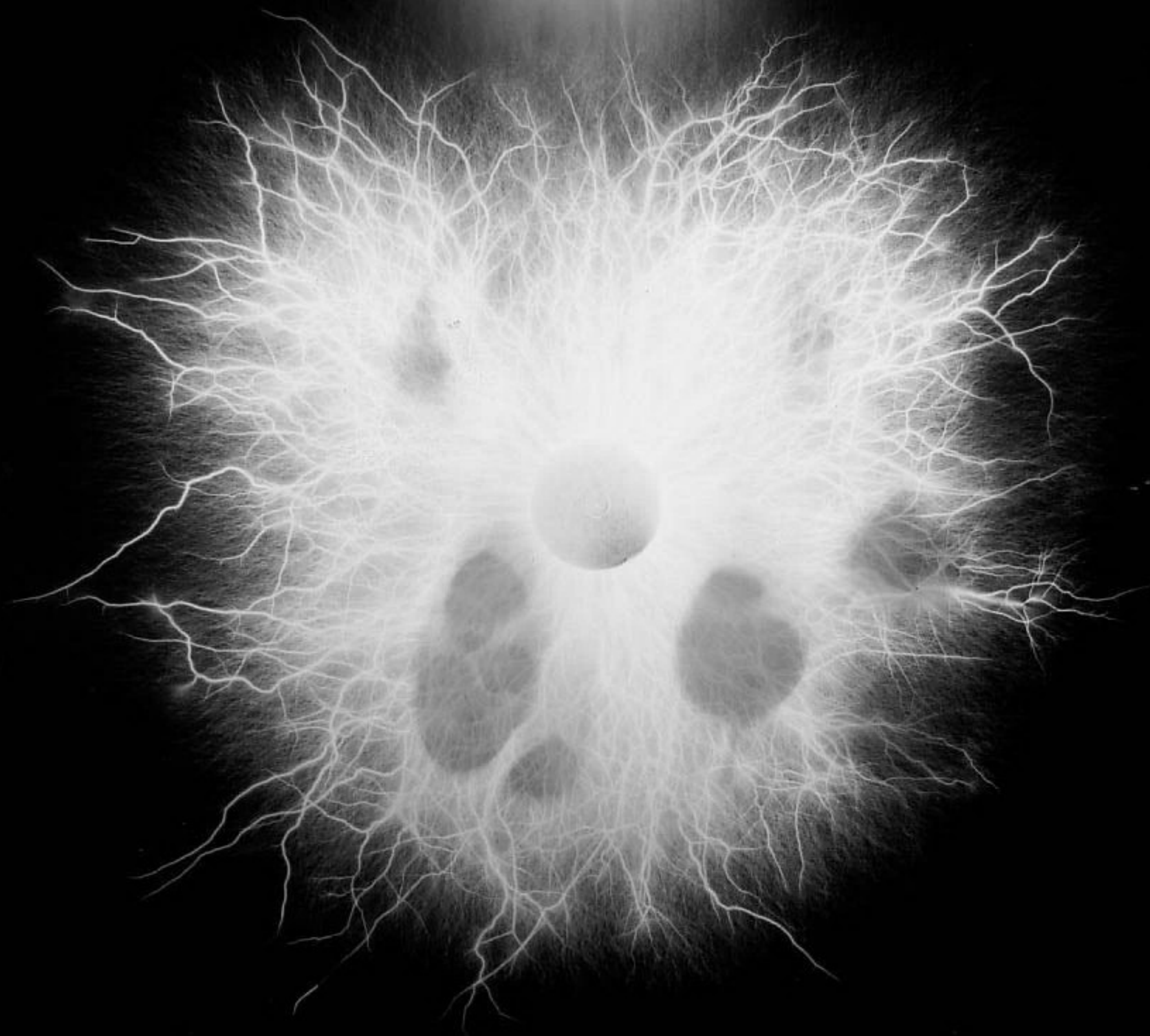




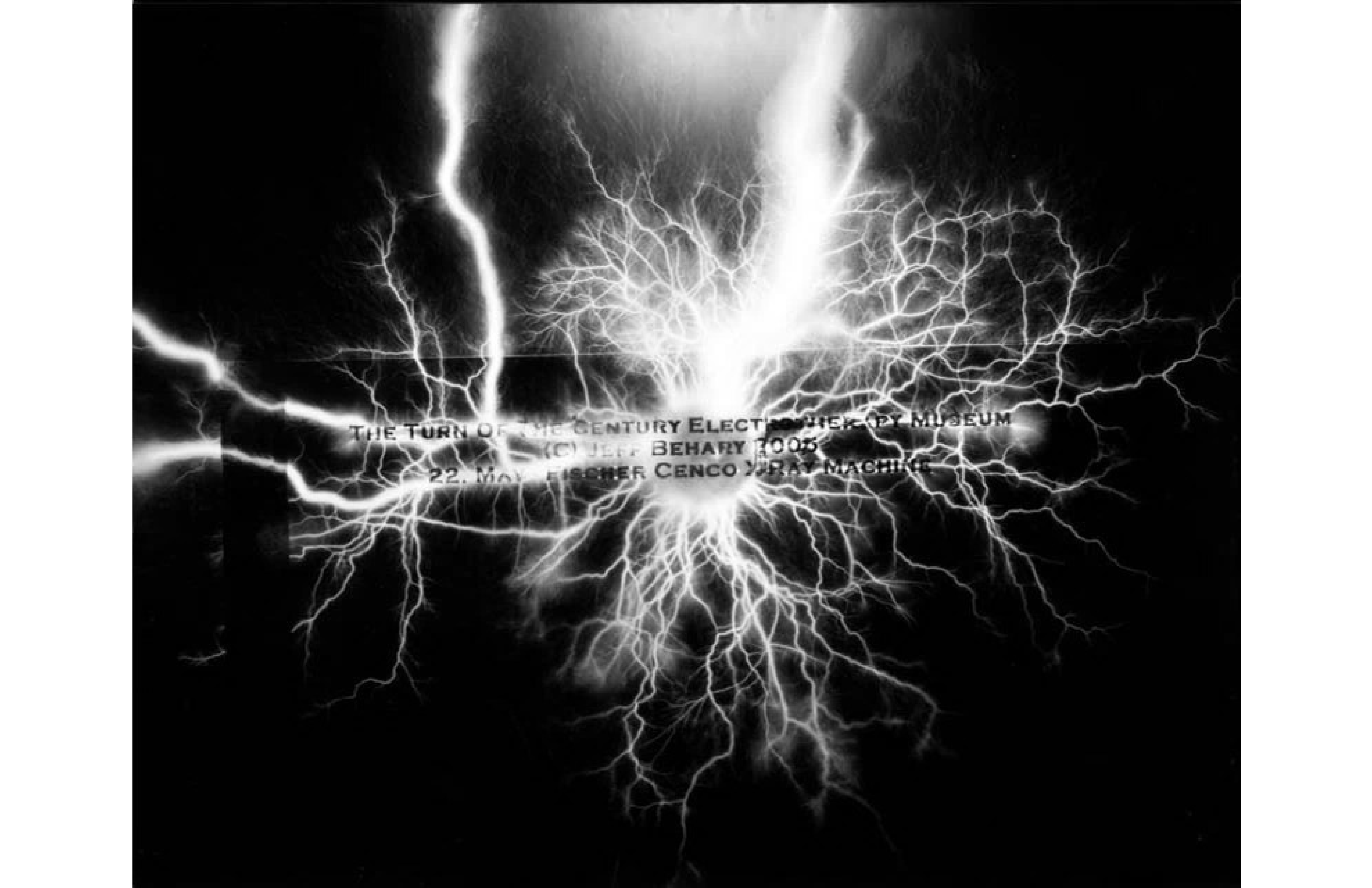












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